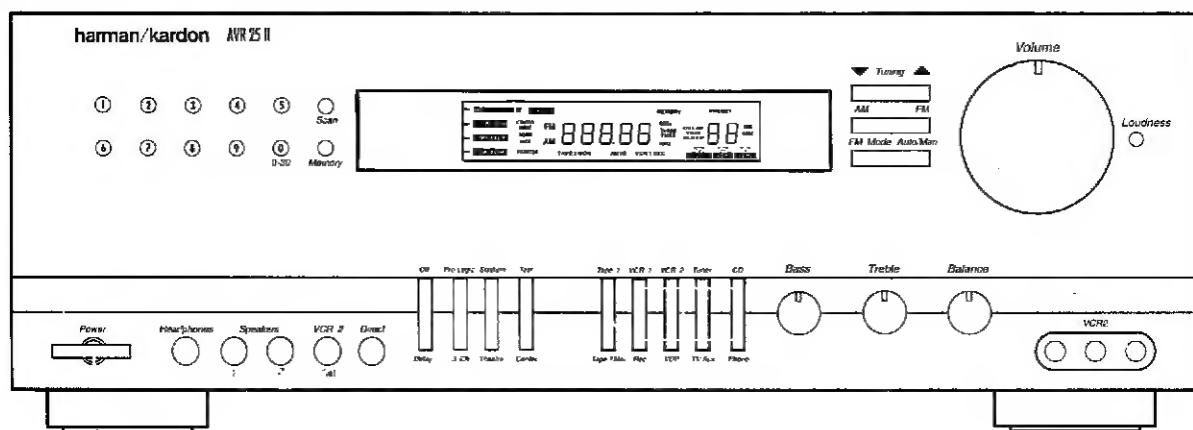


# The Harman Kardon Model AVR25MKII AUDIO AND VIDEO RECEIVER

## Technical Manual



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**harman/kardon**

Parts and Service Office  
80 Crossways Park West, Woodbury, N.Y. 11797  
1112-AVR25MKII G9604 1200 Printed in Korea

## SPECIFICATIONS

## FRONT AMP SECTION

	Nominal	Limit
RMS Output Power		
THD (0.2%, 8 ohms, 1 kHz)	$\geq 68$ W	$\geq 65$ W
Both Channel Driven (20 Hz - 20 kHz)		
THD (20 Hz - 20 kHz) at 65 W, 8 ohms		
20 kHz	$\leq 0.09\%$	$\leq 0.2\%$
1 kHz	$\leq 0.09\%$	$\leq 0.2\%$
20 kHz	$\leq 0.09\%$	$\leq 0.2\%$
IM Distortion at 65 W, 8 ohms		
60:7000 Hz = 4:1	$\leq 0.1\%$	$\leq 0.2\%$
Input Sensitivity at 65 W, 8 ohms		
PHONO (MM)	$2.5 \pm 0.2$ mV	$2.5 \pm 0.3$ mV
CD, AUX, VCR	$150 \pm 20$ mV	$150 \pm 30$ mV
S/N Ratio Input Shorted at Volume Max. (WTD IHF-A) at 65 W, 8 ohms		
PHONO	$\geq 72$ dB	$\geq 65$ dB
CD, AUX	$\geq 91$ dB	$\geq 85$ dB
TV, VCR1,2	$\geq 91$ dB	$\geq 85$ dB
Phono Overload at 1 kHz, THD: 0.5%		
Phono Input → Tape Monitor Output	$\geq 140$ mV	$\geq 120$ mV
Phono Equalization (RIAA 30 Hz - 15 kHz)		
Tape Monitor Output	RIAA $\pm 1.0$ dB	RIAA $\pm 2.0$ dB
Tone Control		
Bass: 100 Hz	$+10 \pm 1.0$ dB	$+10 \pm 2.0$ dB
	$-10 \pm 2.0$ dB	$-10 \pm 3.0$ dB
Treble: 10 kHz	$+10 \pm 1.0$ dB	$+10 \pm 2.0$ dB
	$-10 \pm 2.0$ dB	$-10 \pm 3.0$ dB
Loudness Contour at -40 dB		
100 Hz	$+6 \pm 2.0$ dB	$+6 \pm 3.0$ dB
10 kHz	$+3 \pm 2.0$ dB	$+3 \pm 3.0$ dB
Frequency Response at 1 W, 8 ohms		
CD/AUX	$\pm 1.0$ dB	$\pm 2.0$ dB
Channel Crosstalk Input Shorted at 65 W, 8 ohms		
1 kHz	$\geq 55$ dB	$\geq 48$ dB
10 kHz	$\geq 45$ dB	$\geq 37$ dB

## CENTER AMP SECTION

	Nominal	Limit
RMS Output Power		
THD (0.2%, 8 ohms, 1 kHz)		
Only Center Channel Driven	$\geq 68$ W	$\geq 63$ W
S/N Ratio		
Input Shorted, IHF-A WTD	$\geq 75$ dB	$\geq 68$ dB
Frequency Response at -3 dB		
Normal	130 Hz - 20 kHz	180 Hz - 15 kHz
Wide	40 Hz - 20 kHz	60 Hz - 15 kHz

## REAR AMP SECTION

	Nominal	Limit
RMS Output Power		
THD (1%, 8 ohms, 80 Hz - 7 kHz)		
Both Rear Channel Driven	$\geq 27$ W	$\geq 23$ W
S/N Ratio (Input Shorted, IHF-A WTD)		
Dolby	$\geq 65$ dB	$\geq 57$ dB
Stadium	$\geq 65$ dB	$\geq 57$ dB
Theater	$\geq 65$ dB	$\geq 57$ dB
Frequency Response at -3 dB		
8 ohms, Dolby Pro-Logic	100 Hz - 6 kHz	120 Hz - 5 kHz

## VIDEO AMP SECTION

	Nominal	Limit
Input Sensitivity/Impedance		
VCR1, VCR2, VDP	$1 V_{p,p}/75 \Omega$	$\pm 0.5$ dB
Output Level/Impedance		
VCR1, REC out, TV Monitor out	$1 V_{p,p}/75 \Omega \pm 0.3$ d	$\pm 1.0$ dB
Frequency Response at -3 dB	DC-10 MHz	5 - 6 MHz
Crosstalk at 1.0 MHz	$\geq 50$ dB	$\geq 43$ dB

## FM SECTION

	Nominal	Limit
Tuning Cover Range		
USA/Canada: 75 kHz DIV.	87.5 - 107.9 MHz	
Europe: 40 kHz DIV.	87.5 - 108.0 MHz	
Usable Sensitivity (75 ohms Input)		
USA/Canada: 30 dB S/N	$\leq 11.2$ dbf	$\leq 17.2$ dbf
Europe: 26 dB S/N		
Image Rejection (at 106 MHz)		
USA/Canada	$\geq 60$ dB	$\geq 55$ dB
Europe	$\geq 90$ dB	$\geq 80$ dB
IF Rejection (at 90 MHz)	$\geq 110$ dB	$\geq 100$ dB
Full Limiting (at -3 dB)	$\leq 12.2$ dbf	$\leq 15.2$ dbf
50 dB Quieting Sensitivity (at 98.1 MHz, 100% MOD.)		
IHF Band Pass Filter		
Mono	$\leq 19.2$ dbf	$\leq 23.2$ dbf
Stereo: USA/Canada	$\leq 40.2$ dbf	$\leq 43.2$ dbf
Europe	$\leq 45.3$ dbf	$\leq 48.3$ dbf
Distortion (1 kHz, 100% MOD. at 98.1 MHz)		
IHF Band Pass Filter		
Mono	$\leq 0.2\%$	$\leq 0.5\%$
Stereo	$\leq 0.4\%$	$\leq 0.8\%$
S/N Ratio (1 mV Input, 100% MOD. at 98.1 MHz)		
IHF Band Pass Filter		
Mono	$\geq 70$ dB	$\geq 63$ dB
Stereo	$\geq 65$ dB	$\geq 57$ dB
Frequency Response (at +1 dB, -3 dB)	20 Hz - 15 kHz	50 Hz - 15 kHz
AM Rejection Ratio (100 uV - 20 mV Input)	$\geq 60$ dB	$\geq 50$ dB
Search Level (at 98.1 MHz)	$31.2 \pm 3$ dbf	$31.2 \pm 6$ dbf
Automatic Stereo Threshold (at 98.1 MHz)	$31.2 \pm 3$ dbf	$31.2 \pm 6$ dbf
Muting Threshold (at 98.1 MHz)	$31.2 \pm 3$ dbf	$31.2 \pm 6$ dbf
Overload at 98.1 MHz		
(100% MOD, 100 mV RF Input)	$\leq 0.2\%$	$\leq 0.5\%$
Spurious Response (at 98.1 MHz)		
Antenna Input 3 uV	$\geq 70$ dB	$\geq 60$ dB
Capture Ratio at 40/60 dbf	$\leq 2$ dB	$\leq 3$ dB
Alternative Channel Selectivity (at 98.1 MHz $\pm$ 400 kHz)	$\geq 65$ dB	$\geq 55$ dB
Stereo Separation (at 98.1 MHz, 100% MOD., 1 mV Input)		
IHF Band Pass Filter		
100 Hz	$\geq 40$ dB	$\geq 33$ dB
1 kHz	$\geq 45$ dB	$\geq 38$ dB
10 kHz	$\geq 35$ dB	$\geq 28$ dB
Output Voltage (at 100% MOD., 1 kHz Input)		
Mono	$500 \pm 100$ mV	$500 \pm 150$ mV
Stereo	$450 \pm 100$ mV	$450 \pm 150$ mV

**© AM SECTION**

	Nominal	Limit
Tuning Cover Range		
USA/Canada: 10 kHz Step	520 - 1710 kHz	
Europe: 9 kHz Step	522 - 11611 kHz	
Usable Sensitivity (400 Hz, 30% MOD., S/N 20 dB)	$\leq 500 \text{ uV/m}$	$\leq 800 \text{ uV/m}$
Image Rejection (at 1400 kHz)	$\geq 35 \text{ dB}$	$\geq 30 \text{ dB}$
IF Rejection (at 600 kHz)	$\geq 60 \text{ dB}$	$\geq 50 \text{ dB}$
AGC Figure of Merit (From 100 mV/m at 1000 kHz)	$\geq 50 \text{ dB}$	$\geq 43 \text{ dB}$
Distortion (400 Hz, 30% MOD. 5 mV/m Input)	$\leq 0.8\%$	$\leq 1.5\%$
IF Bandwidth (6 dB Down, 350 uV/m)	5 - 8 kHz	4 - 9 kHz
Audio Response (5 mV/m Input 1 kHz 0 dB, 1000 kHz)		
at -6 dB	80 Hz - 2.3 kHz	100 Hz - 2 kHz
Selectivity (at 350 uV/m)		
$\pm 10 \text{ kHz}$	$\geq 25 \text{ dB}$	$\geq 20 \text{ dB}$
S/N Ratio (1000 kHz, With Antenna Input 5 mV/m)	$\geq 45 \text{ dB}$	$\geq 38 \text{ dB}$
RF Overload (400 Hz 80% MOD, 100 mV/m Input)	$\leq 5\%$	$\leq 10\%$
Search Level (at 1000 kHz)	800 uV $\pm$ 4 dB	800 uV $\pm$ 6 dB
Output Voltage (400 Hz 30% MOD., 5 mV/m Input)	165 $\pm$ 30 mV	165 $\pm$ 50 mV
Whistle	$\leq 7\%$	$\leq 12\%$

**© GENERAL**

Power Consumption;	
USA/Canada	2.5 A
Europe	650 W
Power Supplies;	
USA/Canada	AC 120 V, 60 Hz
Europe	AC 230 V, 50 Hz
Dimensions (W x H x D);	
Inches	17 <sup>3/8</sup> x 6 <sup>1/8</sup> x 16 <sup>1/2</sup>
mm	440 x 155 x 420
Weight (lbs/kgs)	26.9/12.2

These specifications are service target specs.

Specifications and components are subject to change without notice.

Overall performance will be maintained or improved.

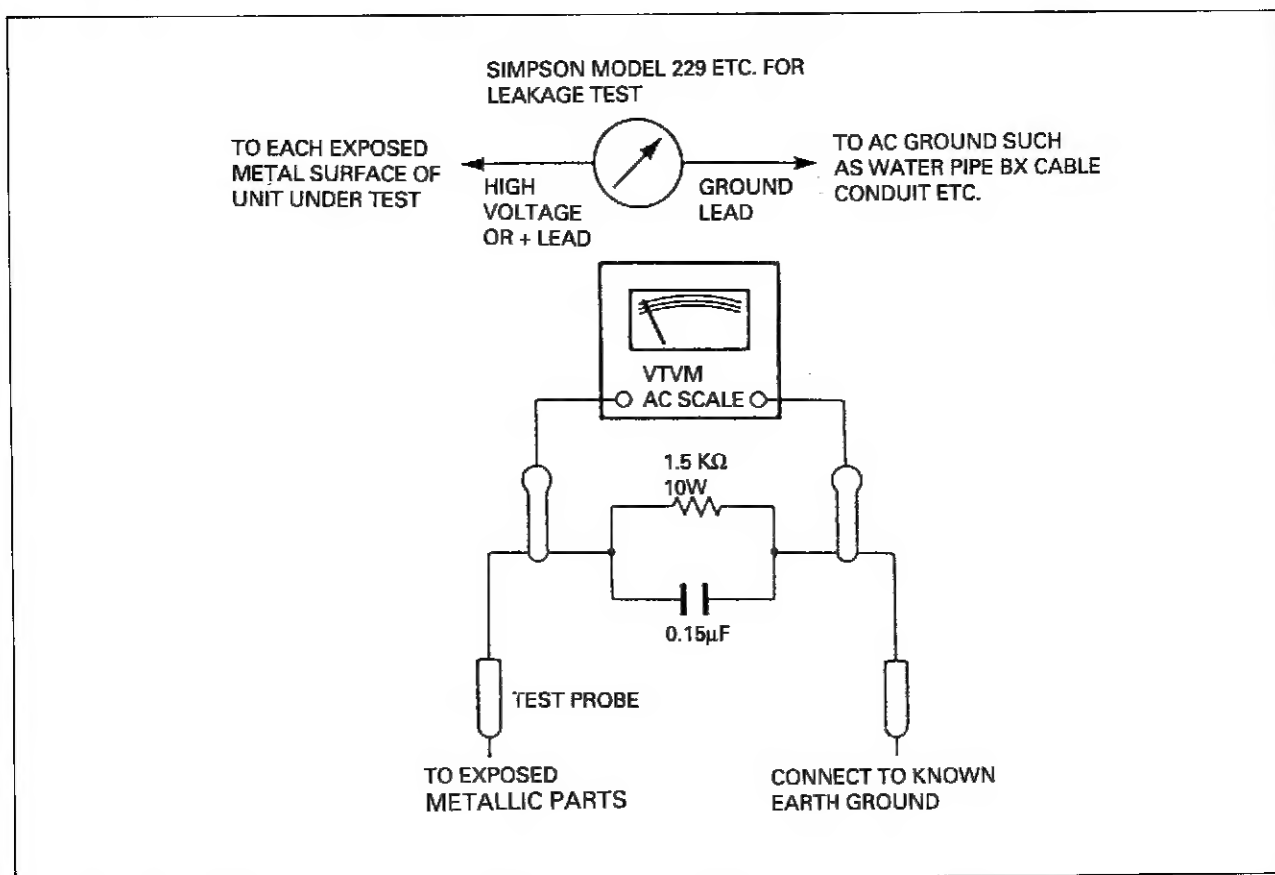
## LEAKAGE TEST

Before returning the unit to the user, perform the following safety checks:

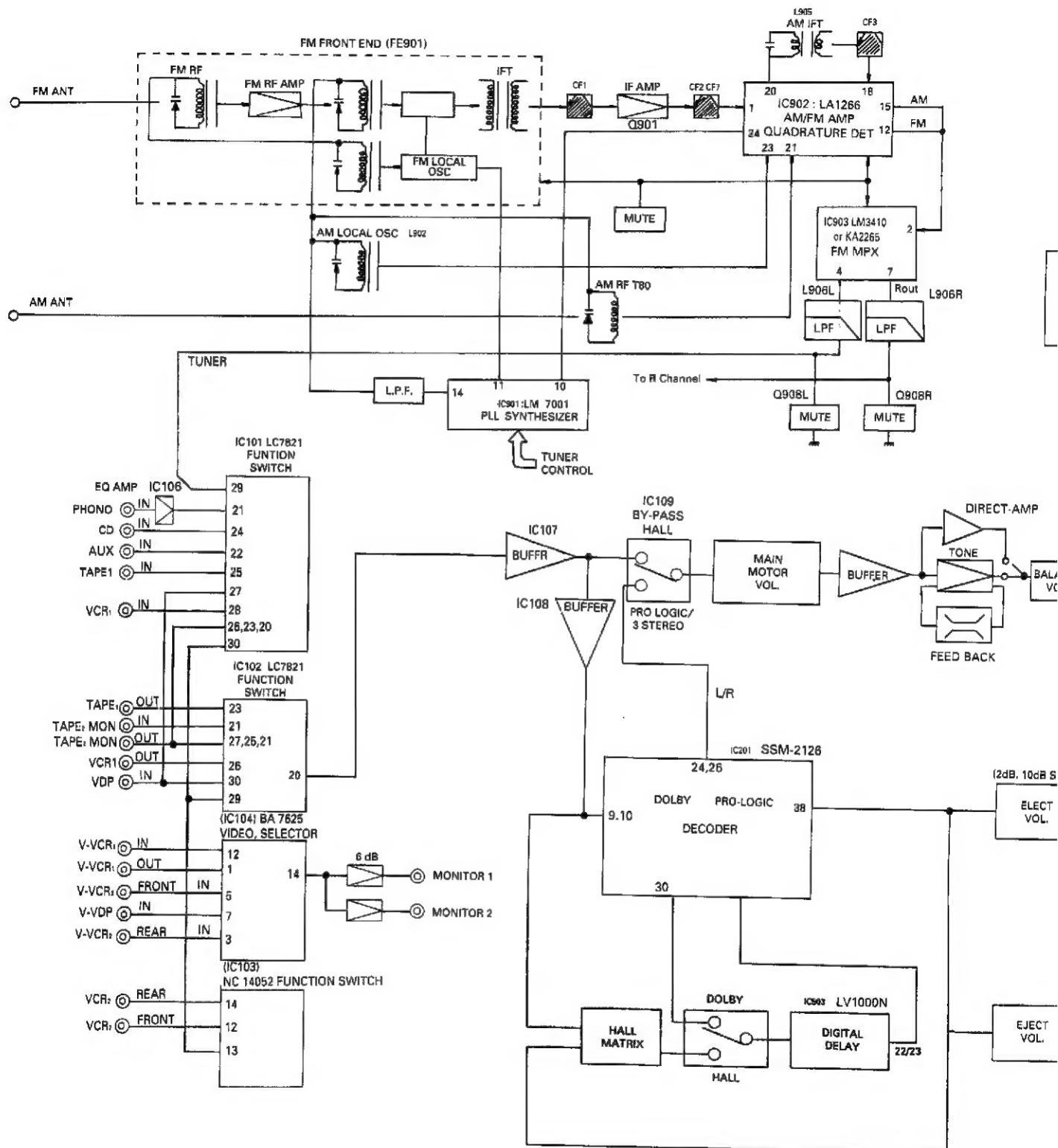
1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metallic parts in the unit.
2. Be sure that any protective devices such as nonmetallic control knobs, insulating fishpapers, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacity networks, mechanical insulators, etc. Which were removed for servicing are properly reinstalled.
3. Be sure that no shock hazard exists; check for leakage current using Simpson Model 229 Leakage Tester, standard equipment item No. 21641, RCA Model WT540A or use alternate method as follows: Plug the power cord directly into a 230-volt AC receptacle (do not use an Isolation Transformer for this test).

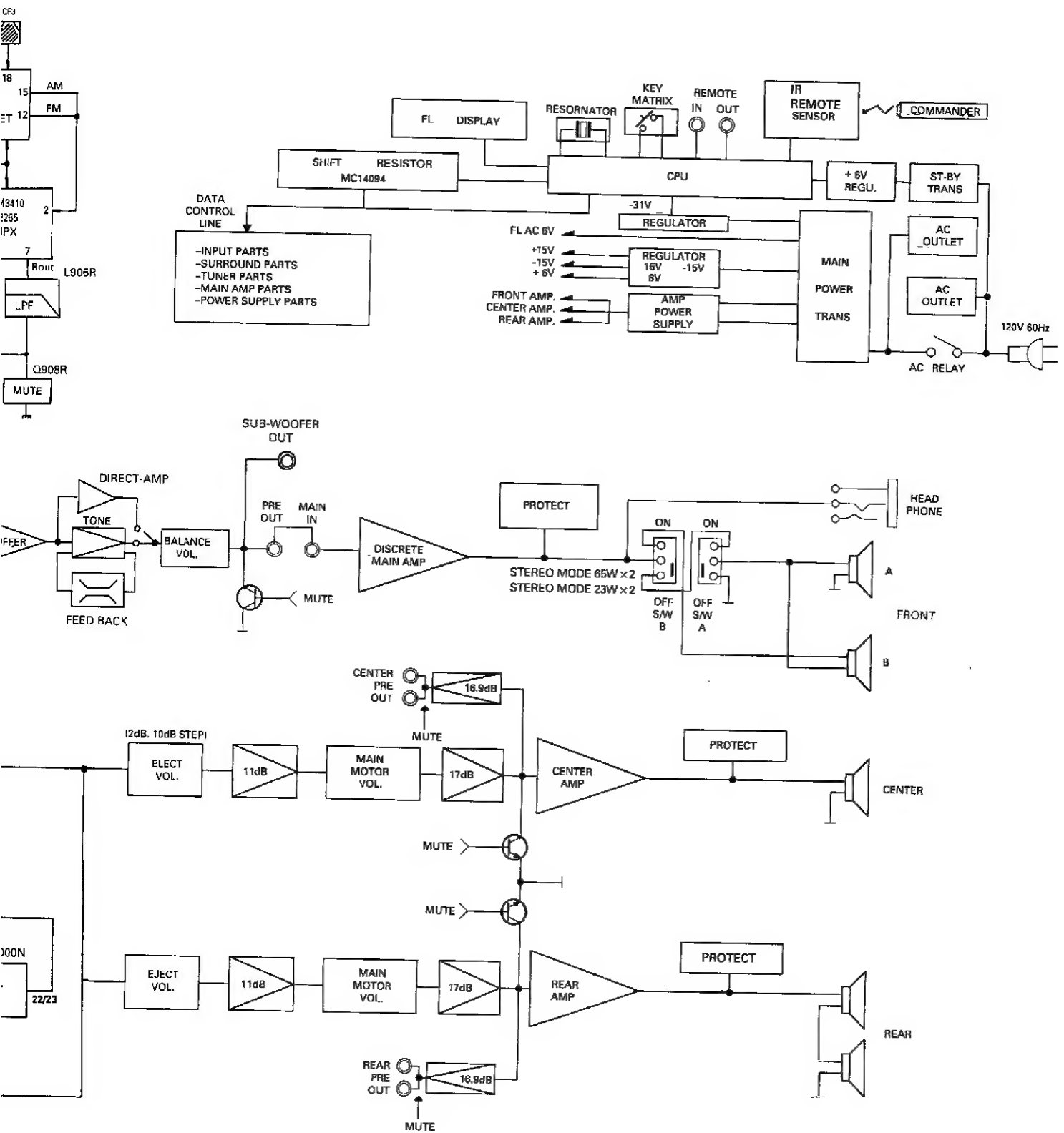
Using two clip leads, connects a 1500 Ohm, 10-watt resistor paralleled by a  $0.15\mu\text{F}$  capacitor, in series with all exposed metal cabinet parts and a known earth ground, such as a water pipe or conduit. Use a VTVM or VOM with 1000 Ohms per volt, or higher sensitivity to measure the AC voltage drop across the resistor. (See Diagram.) Move the resistor connection to each exposed metal part having a return path to the chassis (antenna, metal cabinet, screw heads, knobs and control shafts, escutcheon, etc.) and measure the AC voltage drop across the resistor. (This test should be performed with the power switch in both the On and Off positions.)

A reading of 0.35 volt RMS or more is excessive and indicates a potential shock hazard which must be corrected before returning the unit to the owner.

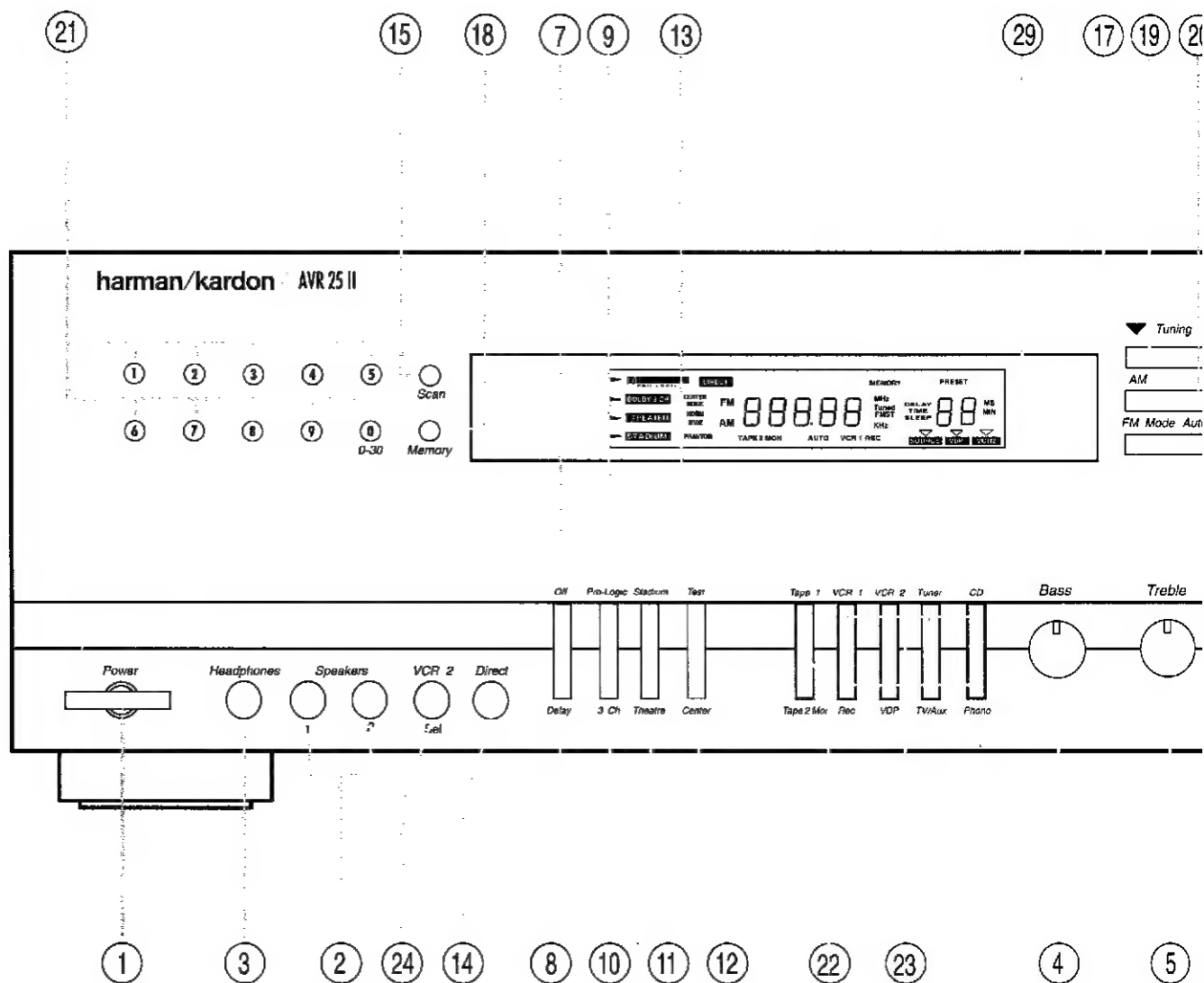


# BLOCK DIAGRAM





# CONTROLS AND FUNCTIONS



## 1. POWER BUTTON

Press this button to turn the power on. Press again to turn the power off. It can also be used as a system power button, if you connect the other components to the switched outlets.

**NOTE:** In POWER OFF state, the POWER indicator will light up orange and power is partially supplied to the infrared remote control receiver and the memory circuitry.

## 2. 1/2 SPEAKER SWITCHES

These switches allow you to select various combinations of speakers as follows;

- To drive 1 pair of speakers, push only the speaker 1 switch in.
- To drive a second pair of speakers, push only the speaker 2 switch in.

- To drive both pairs of speakers, push both 1 and 2 switches in.
- To use headphones for private listening or monitoring, leave both 1 and 2 switches pushed out.

**NOTE:** If both speaker switches are pushed in and only one set of speakers is connected to the receiver, no sound will be heard.

## 3. HEADPHONE JACK

Stereo headphones can be plugged into this jack for private listening. Headphone impedance should be between 8 and 2K ohms. Best results between 200 and 400 ohms.

## 4. BASS CONTROL

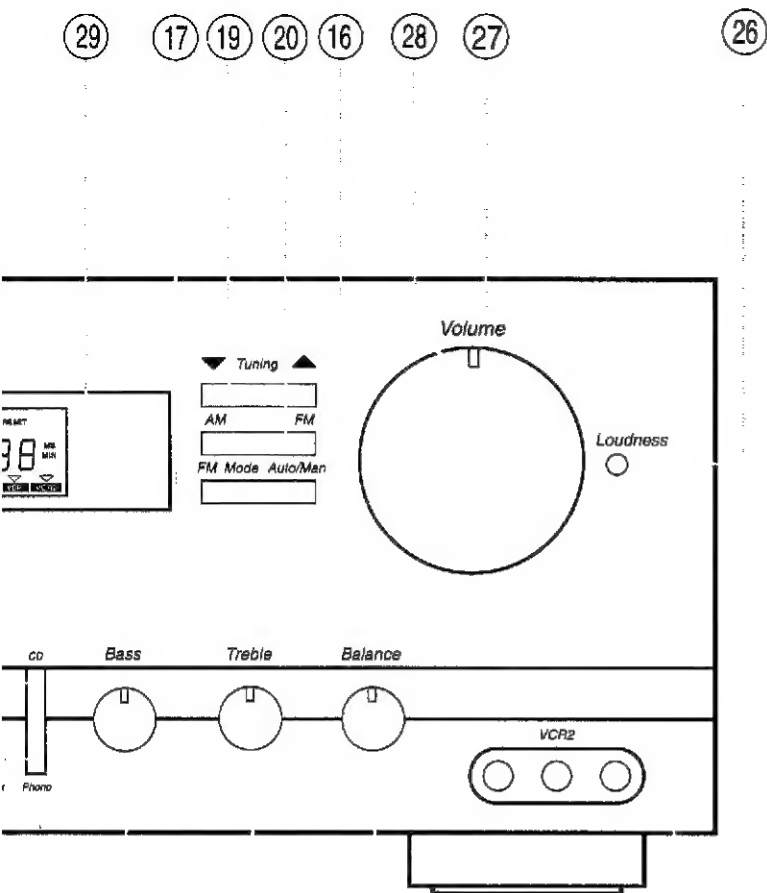
Modifies the low-frequency of the left and right channels  $\pm 10$ dB. Set this control a position for your taste and acoustics.

## 5. TREBLE CONTROL

Modifies the high-frequency of the left and right channels  $\pm 10$ dB. Set this control a position for your taste and acoustics.

## 6. BALANCE CONTR

This control is used for balance relative sound volume of the left and right channel speakers. Clockwise rotation reduces the volume of the left speaker, counterclockwise rotation reduces the volume from the right speaker.



#### 4. BASS CONTROL

Modifies the low-frequency sound of the left and right channels as much as  $\pm 10$ dB. Set this control at a suitable position for your taste and room acoustics.

#### 5. TREBLE CONTROL

Modifies the high-frequency sound of the left and right channels as much as  $\pm 10$ dB. Set this control at a suitable position for your taste and room acoustics.

#### 6. BALANCE CONTROL

This control is used for balancing the relative sound volume of the left and right channel speakers. Clockwise rotation reduces the volume from the left speaker, counterclockwise rotation reduces the volume from the right speaker.

#### 7. SURROUND-OFF MODE SELECTOR

Press this switch to select normal stereo mode.

#### 8. DELAY TIME

Adjusts time delay between front and rear channels, operates only when the surround mode is on. (see Delay Time button on page 16).

Adjusts the surround delay time in steps. For Dolby Surround 20ms is standard.

→ 16ms → 18 ms → ..... → 28 ms → 30 ms

#### 9. PRO LOGIC MODE

Press this button for Pro-Logic mode.

#### 10. 3 CHANNEL MODE

The 3 channel mode can be used when rear speakers are not being used to provide a center (dialog) channel.

#### 11. STADIUM/THEATER MODE

Switches for selecting desired surround mode; Stadium or Theater.

See Surround Sound Effects on page 13.

#### 12. CENTER MODE SELECTOR

This button operates only in DOLBY PRO-LOGIC and DOLBY 3 STEREO mode. The mode changes as below, when the button is pressed in succession.

##### DOLBY PRO-LOGIC MODE

→ NORM → WIDE → PHANTOM

##### DOLBY 3 STEREO MODE

→ NORM → WIDE

The display window shows each mode.

**NORM:** Select this mode if you use a small center speaker. The bass sound of the center channel is reproduced from the front speakers, because the small speaker cannot produce enough bass.

**WIDE:** Select this mode if you use a medium-to-large center speaker. The bass sound is reproduced from the center speaker.

**PHANTOM:** Select this mode if you don't use a center speaker. The center speaker's sound is reproduced from the front speakers.

#### 13. TEST TONE BUTTON

This button operates only in DOLBY PRO-LOGIC and DOLBY 3 STEREO mode. When the button is pressed, 2 seconds of test tone is generated in all channels (Left, Center, Right, and Rear) in succession. The display window shows TEST Left, Center, Right, and Rear in succession (in DOLBY PRO-LOGIC mode) or Left Center or Right (in DOLBY 3 STEREO mode) in succession. Use this button to test speaker connections.



#### 14. SOURCE/DIRECT BUTTON

This feature bypasses the tone control circuitry, resulting in flatter frequency response and wider bandwidth. When it is activated, "DIRECT" illuminates in the display.

#### 15. PRESET SCAN BUTTON

Press this button to scan the preset station frequencies. The receiver stops at each preset location that contains a frequency for about 4 seconds, so you can hear a station. The preset location indicator blinks 4 times. Press this button again to stop scanning.

#### 16. SEARCH SELECTOR

Press this button to select AUTO or MANUAL tuning.

- In AUTO mode, scanning is automatically continued up or down until the next station is picked up by pressing the UP/DOWN tuning buttons. The display window shows 'AUTO'. Use this mode to quickly find strong AM or FM stations.
- In MANUAL mode, the frequency is changed by a step with the UP/DOWN button. If you keep pressing the UP/DOWN tuning buttons, scanning is continued until the button is released.

**NOTE:** Tuning Intervals:

<u>BAND USA/CANADA</u>	
FM	50 KHz
AM	10 KHz

#### 17. FM MODE BUTTON

Press this button to select stereo or mono mode.

- **STEREO:** Provides stereophonic reception of an FM stereo broadcast. The display window shows 'FMST'.
- **MONO:** The left and right channel signals detected from an FM stereo broadcast are mixed and reproduced through both channels. If you want to find a weak FM station, select this mode.

#### 18. STATION MEMORY BUTTON

Use this button to store an AM or FM frequency. Press this button and select one of 30 preset locations to store the frequency with the STATION PRESET buttons while the memory indicator, 'MEMORY' blinks.

**NOTE:** When you store a frequency in a memory location that already contains a frequency, you replace the previous frequency. If your receiver is disconnected from AC power for more than about 10 days, it loses all stored frequencies.

#### 19. UP/DOWN TUNING BUTTONS

Press the DOWN button (v) to tune in lower frequency stations, the UP button (^) to tune in higher frequency stations. If you press the DOWN button when the display is at the bottom of the frequency range, the display returns to the top of the range. If you press the UP button when the display is at the top of the frequency range, the display returns to the bottom of the range. When the receiver finds a strong frequency, the display window shows 'TUNED'.

#### 20. FM/AM BAND SELECTOR

Press these buttons to select the FM or AM radio band. When you select the AM or FM radio band, the receiver displays the last frequency selected on that band.

#### 21. STATION PRESET BUTTONS

Select one of 30 preset locations to recall the station stored in memory. The input function is automatically changed to TUNER when the button is pressed. When you select numbers from 10 through 29, you must select the second digit within about 2 seconds. To select preset 30, simply press "0".

#### 22. TAPE 2 MONITOR BUTTON

Set TAPE 2 MONITOR to the "off" position when you want to hear the other input functions. Press this button to monitor the cassette deck connected to the TAPE 2 MON input jacks.

#### 23. INPUT FUNCTION SELECTOR

Press the button to select the desired input function: VCR 1, VCR 2, VDP, TAPE 1, TV/Aux, Tuner, CD or Phono.

To dub from VCR 2 to VCR 1, press the VCR 2 button and then press the VCR 1 REC button.

For the input function of VCR 1 press the VCR 2 button and VCR1 DUBBING button. Set the recording VCR (VCR 1) to recording mode. Set the playback VCR (VCR 2) to play a tape.

Dubbing will start.

- To hear another input source during video tape dubbing: Press the input function you want to hear, and play the input source.

**NOTE:** If you press the TEST TONE button during VCR 1 DUBBING, the audio signal is not recorded.

#### 24. VCR 2 SELECTOR

Push in this button to select the VCR 2 jacks on the front, rather than the VCR 2 jacks on the rear.

#### 25. VCR 2/CAMCORDER INPUT JACKS

##### VIDEO IN:

Connect to the VIDEO OUTPUT jack of a VCR (yellow jack).

##### AUDIO IN:

Connect to the AUDIO OUTPUT jacks of a VCR (red and white jacks).

#### 26. LOUDNESS BUTTON

Press this button to compensate for the response of the human ear at low listening levels (known as the Fletcher-Munson hearing curve). The high and low frequencies are automatically boosted when this button is pushed in. In the OFF position, the frequency response is flat at all volume levels. This button does not work at high volume levels.

#### 27. VOLUME CONTROL

Turn the VOLUME clockwise to increase the volume and counterclockwise to decrease it. The volume of the front, center, and rear channels is changed at the same time.

#### 28. VOLUME LEVEL INDICATOR

This indicator moves in accordance with the volume level. The indicator blinks when the mute button on the remote commander is pressed.

#### 29. DISPLAY WINDOW

This window shows the state of operation for easier control of the receiver. It also contains the IR Remote Sensor.

## DISASSEMBLY PROCEDURES

REFER TO PAGES 23 AND 37.

### ① COVER TOP REMOVAL

Remove 8 screws (A) and then remove the Cover Top (61).

### ② COVER BOTTOM REMOVAL

Remove 9 screws (B) and then remove the Cover Bottom (35).

### ③ FRONT PANEL ASSEMBLY REMOVAL

1. Remove the Cover Top (61), referring to the previous step ①.
2. Remove the Card cable from wafer (CP502) on the Volume P.C.Board (PCB6).
3. Remove the Card cable from wafer (CP802) on the Dolby P.C.Board (PCB8).
4. Remove the Card cable from wafer (CP803) on the Tuner P.C.Board (PCB2).
5. Disconnect (CP401 and CP581) from the Dolby P.C.Board (PCB8).
6. Disconnect (CP291) from the Tuner P.C.Board (PCB2).
7. Disconnect (CP402) from the Main P.C.Board (PCB1).
8. Disconnect (CP801) from the Power Supply P.C.Board (PCB3).
9. Remove 4 screws (C), 4 screws (A) and then remove the Front Panel Assembly (AA).

### ④ HEADPHONE P.C.BOARD (PCB9) REMOVAL

1. Remove the Front Panel Assembly (AA), referring to the Previous step ③.
2. Remove 2 screws (E) and then remove the Headphone P.C.Board (PCB9).

### ⑤ VOLUME P.C.BOARD (PCB6) REMOVAL

1. Remove the Front Panel Assembly (AA), referring to the Previous step ③.
2. Pull out the Volume Knob (5) with LED P.C.Board (PCB10).
3. Remove the Hex Nut from the volume-motor to remove the Volume P.C.Board (PCB6).
4. Remove 2 screws (F) and then remove the Volume P.C.Board (PCB6).

### ⑥ TONE P.C.BOARD (PCB5) REMOVAL

1. Remove the Front Panel Assembly (AA), referring to the Previous step ③.
2. Pull the Bass, Treble, Balance Knobs (7).
3. Remove the Hex Nuts from the variable resistors (19, 20).
4. Remove 4 screws (G) and then Tone P.C.Board (PCB5).

### ⑦ FRONT P.C.BOARD (PCB7) REMOVAL

1. Remove the Front Panel Assembly (AA), referring to the Previous step ③.
2. Remove 11 screws (H) and then remove the Front P.C.Board (PCB7).

### ⑧ SUB-WOOFER P.C.BOARD (PCB11) REMOVAL

1. Remove the Cover Top (61), referring to the previous step ①.
2. Disconnect (CP903) on the Tuner P.C.Board (PCB2).
3. Remove 2 screws (K) and then remove the Sub-Woofer P.C.Board (PCB11).

### ⑨ TUNER P.C.BOARD (PCB2) REMOVAL

1. Remove the Cover Top (61), referring to the previous step ①.
2. Remove the Card cable from wafer (CP803) on the Tuner P.C.Board (PCB2).
3. Disconnect (CP102, CP103, CP104, CP105, CP291, CP501, CP704, CP901, CP902 and CP903) on the Tuner P.C.Board (PCB2).
4. Remove 2 screws (I), 6 screws (J) and then remove the Tuner P.C.Board (PCB2).

### ⑩ DOLBY P.C.BOARD (PCB8) REMOVAL

1. Remove the Cover Top (61), referring to the previous step ①.
2. Remove the Front Panel Assembly (AA), referring to the previous step ③.
3. Remove the Card cable (CN501) on the Dolby P.C.Board (PCB8).
4. Disconnect (CP601) from the Dolby P.C.Board (PCB8).
5. Unjoin 2 Fasteners (37) for remove the Dolby P.C.Board (PCB8).

### ⑪ SURROUND P.C.BOARD (PCB4) REMOVAL

1. Remove the Cover Top (61), referring to the previous step ①.
2. Do Steps ②, ③ and ⑩.
3. Disconnect (CP602) from the Power Supply P.C.Board (PCB3).
4. Remove 6 Screws (L) and then remove the Chassis Front (36).
5. Remove 2 screws (M) and then remove the Surround P.C.Board (PCB4).

### ⑫ CHASSIS BACK REMOVAL

1. Remove the Cover Top (61), referring to the previous step ①.
2. Do Steps ②, ③, ⑩, ⑪.

3. Unsolder 2 leads of the AC Cord (59) from neutral and live on the Power Supply P.C.Board (PCB3).
4. Remove 20 screws (N) and then remove the Chassis Back (57).

#### **[13] MAIN P.C.BOARD (PCB1) REMOVAL**

1. Remove the Cover Top (61), referring to the previous step [1].
2. Do Steps [2], [3] and [2].
3. Unsolder all leads of Q262L/R/C, Q263L/R/C, Q270L/R/C and IC241 from copper track on the Main P.C.Board (PCB1).
4. Disconnect (CP241) from the Power Transformer (62).
5. Remove 2 screws (O) and then remove the Main P.C.Board (PCB1).

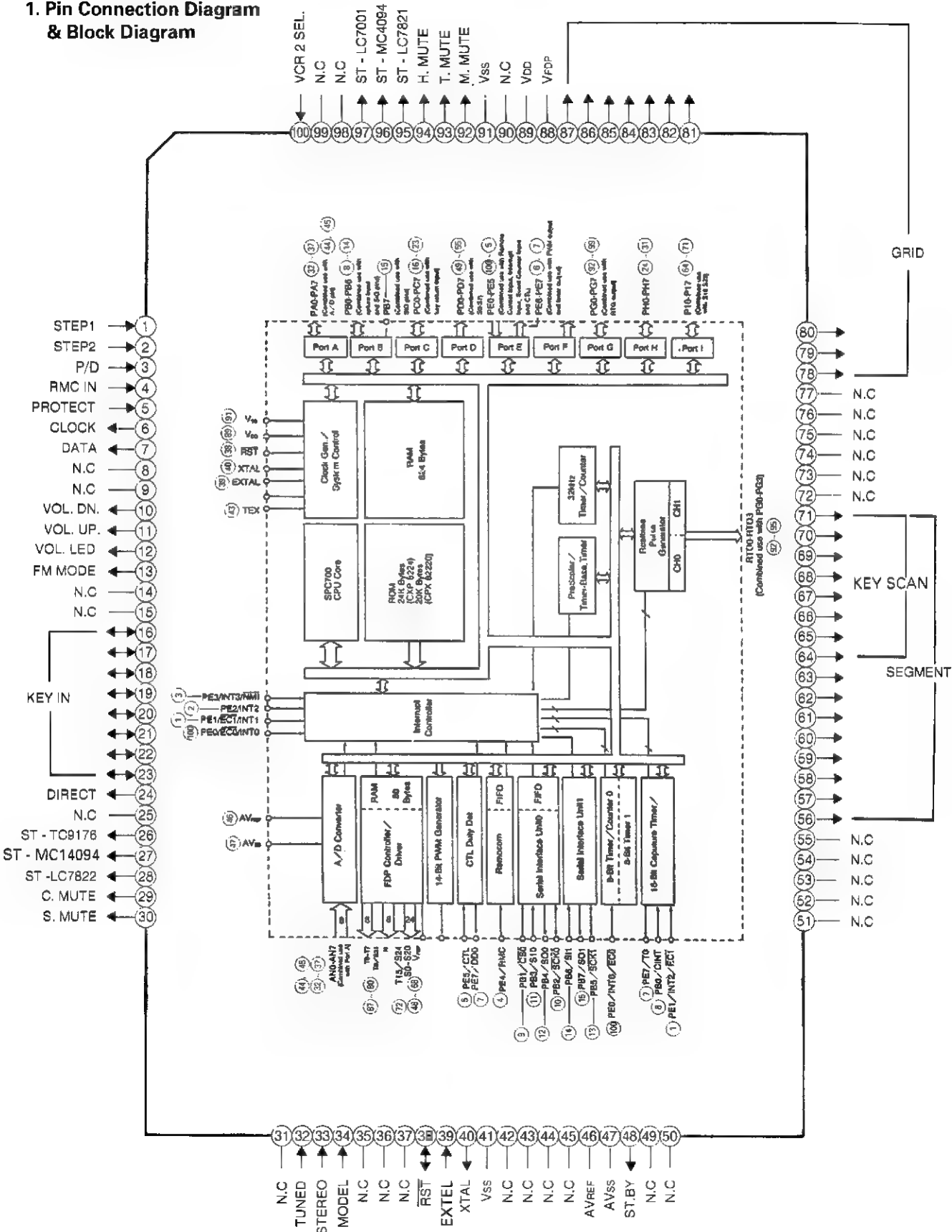
#### **[14] POWER SUPPLY P.C.BOARD (PCB3) REMOVAL**

1. Remove the Cover Top (61), referring to the previous step [1].
2. Disconnect (CP801, CP703, CP602, CP101, CP701 and CP702) from Power Supply P.C.Board (PCB3).
3. Disconnect (CP704) from the Tuner P.C.Board (PCB2).
4. Unsolder 2 leads of the AC Cord (59) from neutral and live on the Power Supply P.C.Board (PCB3).
5. Remove 4 screws (P) and then remove the Power Supply (PCB3).

CIRCUIT DESCRIPTION

CPU (IC801) : CXP82220-107Q (8 bit SINGLE-CHIP MICROCOMPUTER)

1. Pin Connection Diagram & Block Diagram



## 2. Pin Functions

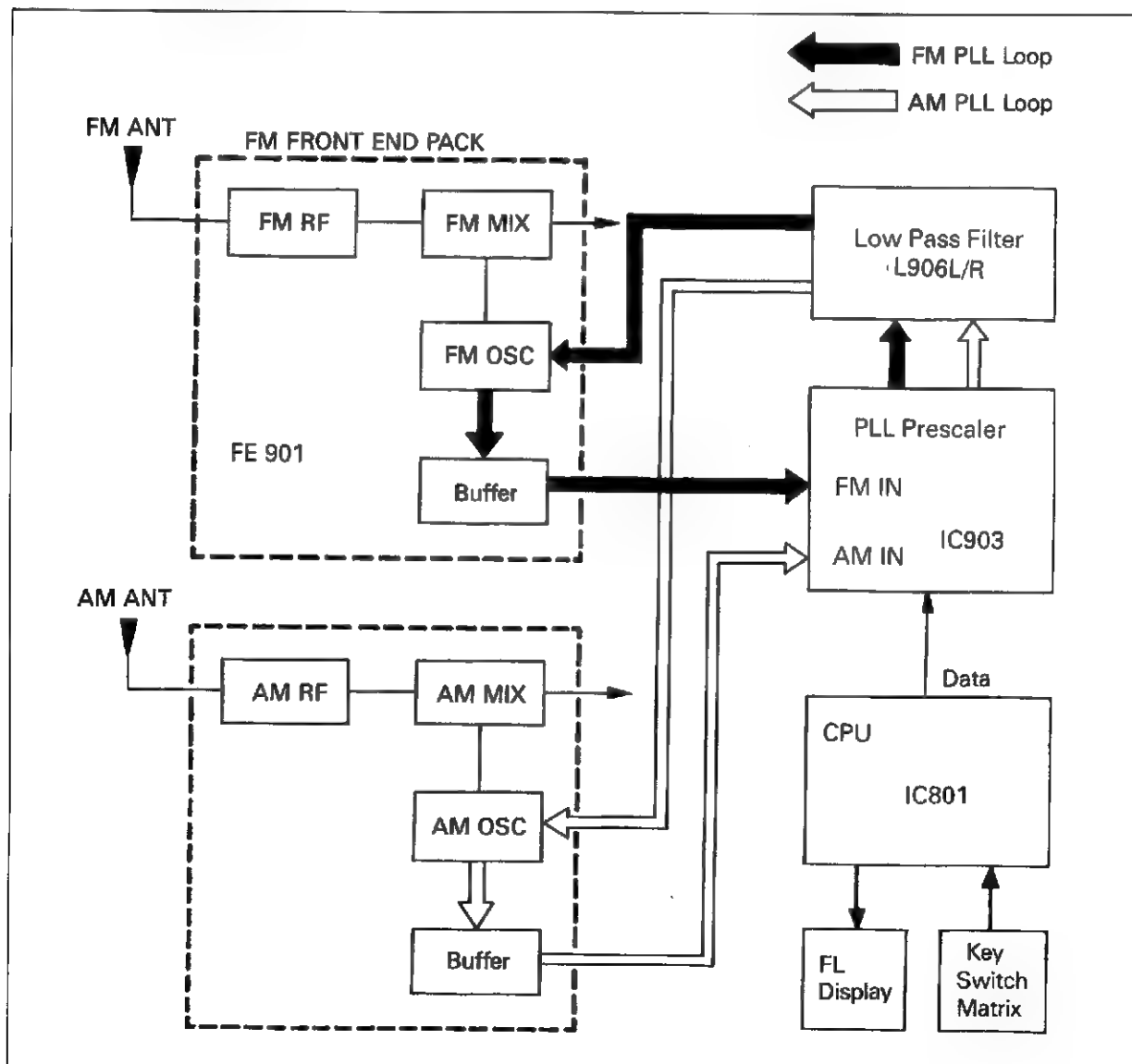
Pin No.	Symbol	Description															
1 / 2	STEP 1 / STEP 2	Input to select frequency band and step according to regions. <table><tr><th>REGION</th><th>FREQUENCY</th><th>STEP</th><th>STEP 1</th><th>STEP 2</th></tr><tr><td>AMERICA</td><td>FM: 87.5 - 107.9 MHz AM: 520 - 1710 kHz</td><td>200 kHz 10 kHz</td><td>H</td><td>H</td></tr><tr><td>EUROPE</td><td>FM: 87.5 - 108 MHz AM: 522 - 1611 kHz</td><td>50 kHz 9 kHz</td><td>L</td><td>L</td></tr></table>	REGION	FREQUENCY	STEP	STEP 1	STEP 2	AMERICA	FM: 87.5 - 107.9 MHz AM: 520 - 1710 kHz	200 kHz 10 kHz	H	H	EUROPE	FM: 87.5 - 108 MHz AM: 522 - 1611 kHz	50 kHz 9 kHz	L	L
REGION	FREQUENCY	STEP	STEP 1	STEP 2													
AMERICA	FM: 87.5 - 107.9 MHz AM: 520 - 1710 kHz	200 kHz 10 kHz	H	H													
EUROPE	FM: 87.5 - 108 MHz AM: 522 - 1611 kHz	50 kHz 9 kHz	L	L													
3	P / D	Input to detect power down. (At "L", it is active.)															
4	RMC IN	Input for remote control signal. (At "L", it is active.)															
5	PROTECT	Signal input for protection. (At "L", it is active.)															
6 / 7	CK / DA	Clock / Data output for LC7821, GD4094, TC9213 and LM7001.															
8 / 9	N.C.	Not used !															
10	VOL. DOWN	Output to drive volume motor for decreasing volume level. (At "H", it is active.)															
11	VOL. UP	Output to drive volume motor for increasing volume level. (At "H", it is active.)															
12	VOL. LED	Output to drive volume LED.															
13	FM MODE	Output to select FM MONO or STEREO. At "H", FM MONO is selected and at "L", FM STEREO is selected.															
14 / 15	N.C.	Not used !															
16 - 23	KEY IN	Data input for key scan.															
24	DIRECT	Output to allow sound signal to by-pass tone control circuitry. (At "H", it is active.)															
25	N.C.	Not used !															
26	ST-TC9176	Chip enable output for TC9176.															
27	ST-MC14094	Chip enable output for MC14094.															
28	ST-LC7822	Chip enable output for LC7822.															
29	C. MUTE	Output for center mute. Output, "H" under the following conditions. 1. When power is turned on or off. 2. When center mode is turned on or off. 3. When center mode is selected. 4. When test tone mode is on or off or when the channel is changed in the test tone mode. 5. When the protection terminal's level is "L". 6. When "-∞" mute signal is received from the commander.															
30	S. MUTE	Output for surround mute. Output, "H" under the following conditions. 1. When power is turned on or off. 2. When surround mode is selected. 3. When test tone mode is on or off or when channel is changed in the test tone mode. 4. When adjusting delay time. 5. When the protection terminal's level is "L". 6. When "-∞" mute signal is received from the commander.															
31	N.C.	Not used !															
32	TUNED	Input to detect station during tuning. If "L" is inputted during tuning, tuning stops at that frequency.															
33	STEREO	Input to light "STEREO" indicator. (At "L", it is active.)															

Pin No.	Symbol	Description
34	MODEL	Input to select. (At "H", it is active)
35 - 37	N.C.	Not used ! (Connected to $V_{DD}$ )
38	RST	Input to reset CPU.
39	EXTAL	Input for crystal oscillator.
40	XTAL	Output for crystal oscillator.
41	$V_{SS}$	Ground.
42	N.C.	Not used !
43 - 45	N.C.	Not used ! (Connected to $V_{DD}$ )
46	$AV_{ref}$	Reference voltage. (Connected to 5 V, not $V_{DD}$ .)
47	$AV_{SS}$	Ground.
48	ST.BY	When power is on, control data output is "H". When power is off, control data output is "L" and last memory function is activated.
49 - 55	N.C.	Not used !
56 - 63	SEGMENT	Segment signal output for FIP.
64 - 71	SEGMENT / KEY SCAN	Segment signal output for FIP and Data output for key scan.
72 - 77	N.C.	Not used !
78 - 87	GRID	Grid signal output for FIP.
88	$V_{FDP}$	Power supply for FIP controller.
89	$V_{DD}$	+5 V power supply.
90	N.C.	Not used !
91	$V_{SS}$	Ground.
92	M. MUTE	Output for main mute. Output is "H" under the following conditions. 1. When power is turned on or off. 2. When function is changed. 3. When the protection terminal's level is "L". 4. When "-∞" mute signal is received from the commander.
93	T. MUTE	Output for tuner mute. Output, "H" under the following conditions. 1. When power is turned on or off. 2. When tuner band or FM mode is changed. 3. When Tuning Up or Down button is pressed. 4. When recalling the station stored in memory. 5. When the protection terminal's level is "L". 6. When "-∞" mute signal is received from the commander.
94	H. MUTE	Output for headphone mute. Output, "H" under the following conditions. 1. When power is turned on or off. 2. When selecting the input function. 3. When the protection terminal's level is "L". 4. When "-∞" mute signal is received from the commander.
95	ST-LC7821	Chip enable output for LC7821.
96	ST-MC4094	Chip enable output for MC4094.
97	ST-LC7001	Chip enable output for LC7001.
98 / 99	N.C.	Not used !
100	VCR 2 SEL.	Input to select VCR 2 rear or front. At "H", VCR 2 rear is selected and at "L", VCR 2 front is selected.

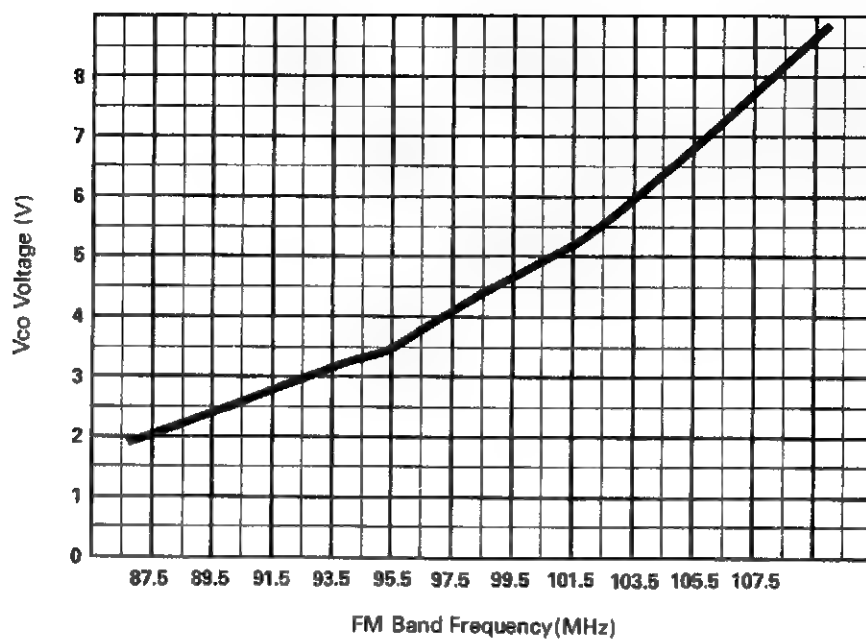
### 3. Key Matrix

Pin No.	64	65	66	67	68	69	70	71
16	3 CHANNEL	TAPE2 MON.			TV/AUX		▶	◀
17	DIRECT	CENTER		SURR. MODE			AUTO MANU.	MODE
18		VCR1/REC			VDP	VCR2	FM	AM
19								
20							CD	TUNER
21	P.SCAN	5	9		MEMO.	VCR1		
22	1	4	2	3		TAPE1	TEST	OFF
23	6	0	7	8	PWR		STADIUM	PRO-LOGIC

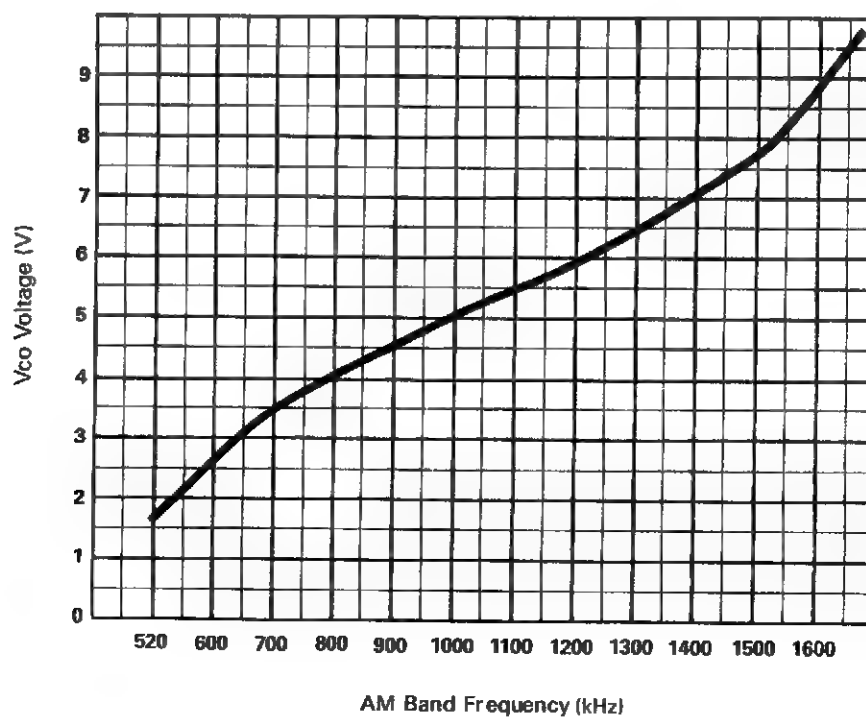
### 4. Digital Tuning System Description



- Vco vs. FM Band Frequency Curve



- Vco vs. AM Band Frequency Curve



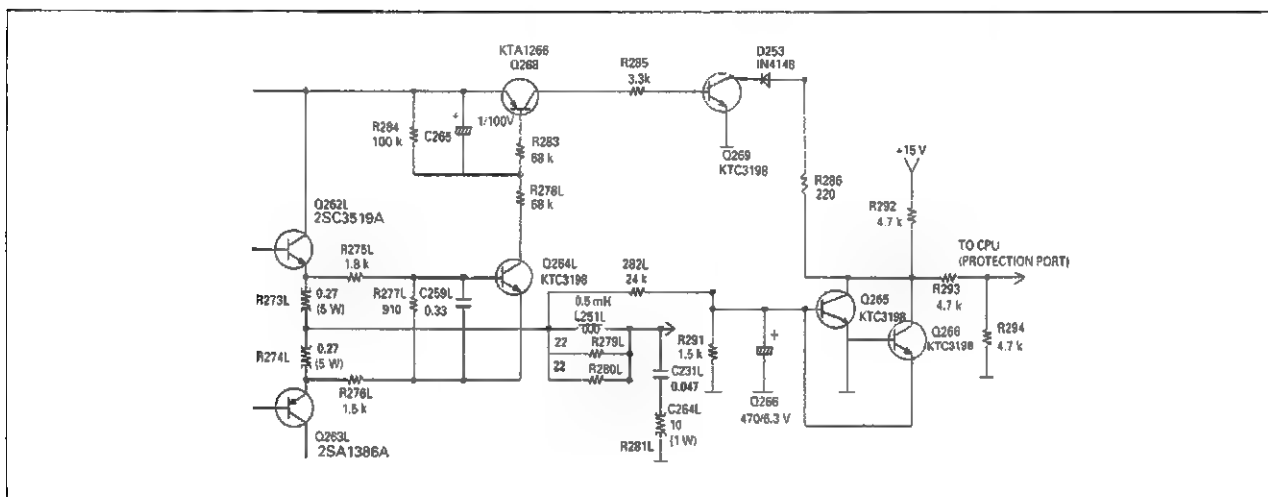


## 5. Protection Circuits

### Speaker Protection Circuits

The CPU protects both this unit and the speakers when an abnormally high current flows in Q262 L/R/C and Q263 L/R/C due to excessive input drive, too low of a load impedance, or short of the speaker terminals. If current increase is excessive, the voltage across R273 L/R/C or R274 L/R/C turns on Q264 L/R/C, then Q268 turns on Q269.

It makes the protection port of the CPU to low state, Then the power is turned off.

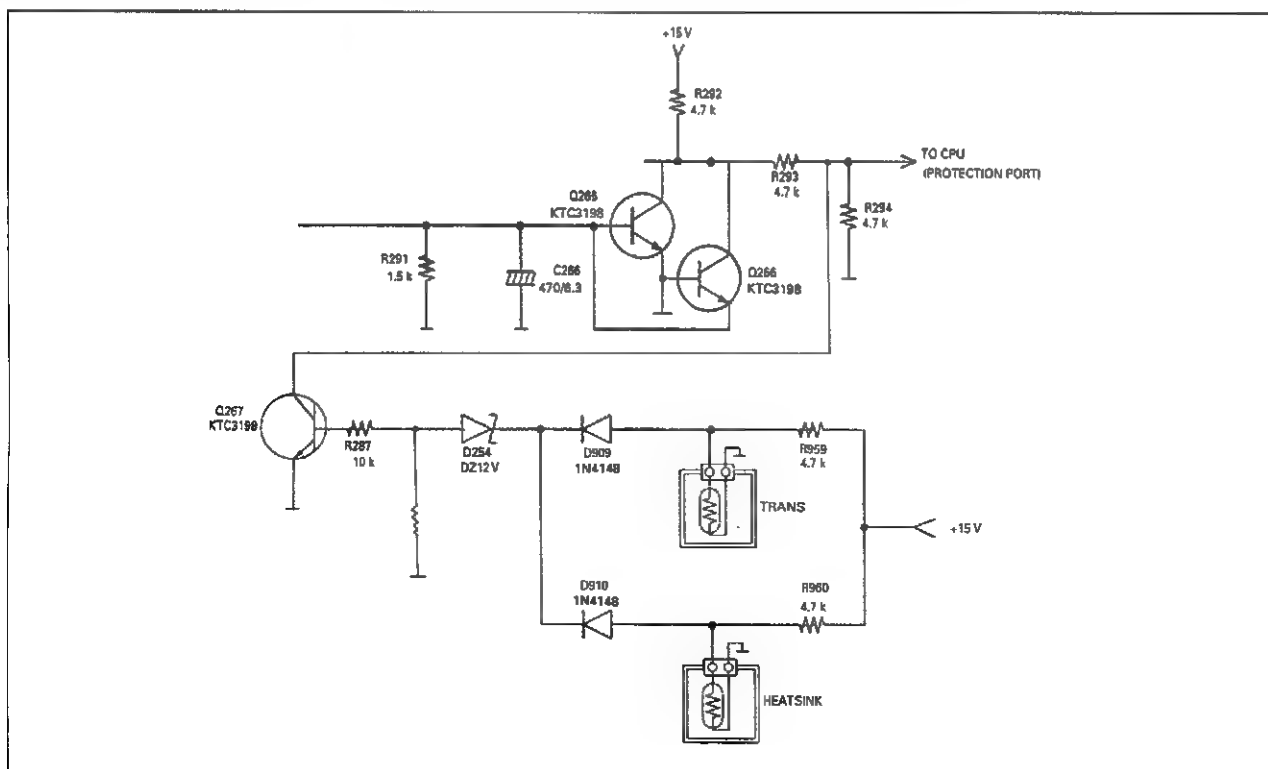


### Thermal Protection Circuits

This unit has a overload thermal protection circuits to guard against abnormal operation.

When the temperature of TRANS POSISTOR installed with the main transformer or H/SINK POSISTOR rises abnormally, the resistance of the posistor becomes larger and Q221 is turned on.

It makes the protection port of the CPU to low state. Then the power is turned off.



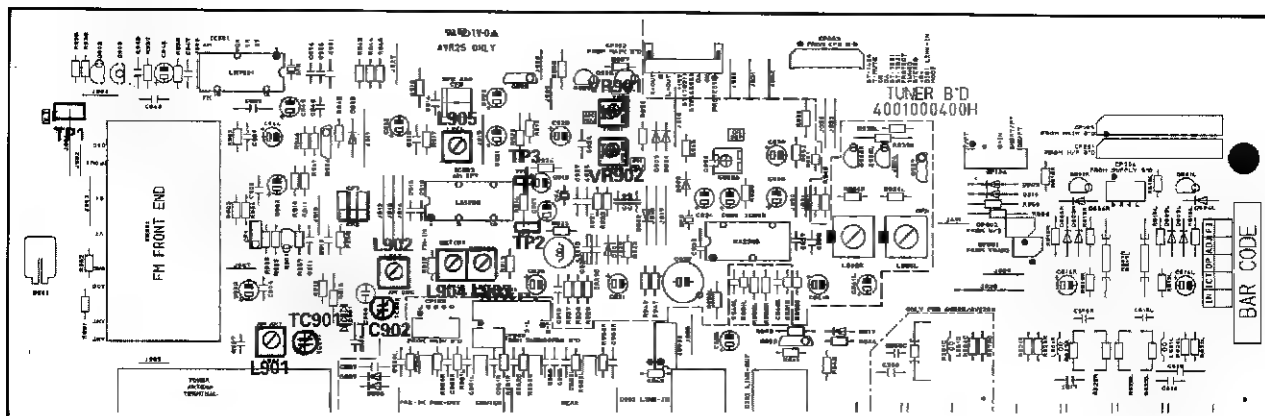
## ALIGNMENT PROCEDURES

### 1. Equipment Required

- AM Standard Signal Generator (AM SSG)
- Oscilloscope
- AC Voltmeter
- FM Standard Signal Generator (FM SSG)
- Stereo Modulator
- Audio Generator
- Distortion Meter
- DC Voltmeter
- Frequency Counter

**Note :** Disconnect external FM antenna prior to alignment.

### 2. Alignment and Test Points (PCB2)

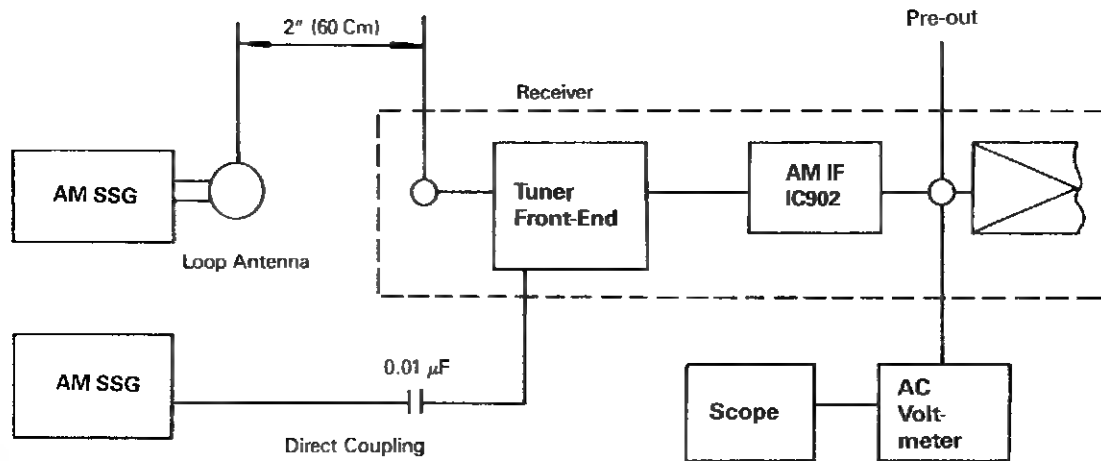


### 3. AM IF and RF Alignment

Preparation

1. Output of Signal Generator should not be higher than necessary to obtain an optimum output reading.
2. Signal Generator Modulation: 30%.
3. Switch: Press to AM.

Step	Signal Generator Frequency	Receiver Frequency on the Display	Equipment Connection	Adjustment Point	Adjust for
1	999 kHz (400 Hz, Mod.)	522 kHz	DC Voltmeter TP1	L902	1.2 V reading
		1611 kHz	DC Voltmeter TP1	TC902	8.5 V reading
2	594 kHz (400 Hz, Mod.)	594 kHz	AC Voltmeter to TAPE OUT jack.	L901 (ANT Coil)	Maximum reading
3	1404 kHz (400 Hz, Mod.)	1404 kHz	AC Voltmeter to TAPE OUT jack.	TC901 (ANT Trimmer)	Maximum reading
4	450 kHz (400 Hz, Mod.)	999 kHz	AC Voltmeter to TAPE OUT jack.	L905 (IFT)	Maximum reading
5	999 kHz (400 Hz, Mod.)	999 kHz	Same as Step 1.	VR901	FL display 'TUNED' Indication on receiver with AM SSG Output level of 800 $\mu$ V/m



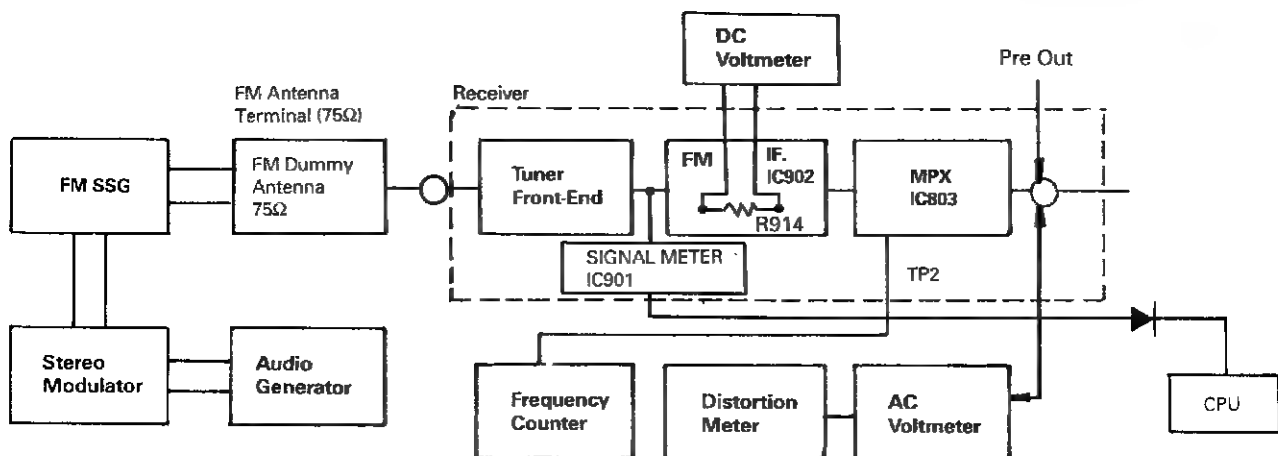
AM Alignment Connection

#### 4. FM IF Alignment

Preparation

1. Signal Generator output should be no higher than necessary to obtain an optimum output reading.
2. Switch Press to FM.
3. Signal generator deviation : 40 kHz.

Step	Signal Generator Frequency	Receiver Frequency Display	Equipment Connection	Adjustment Point	Adjust for
1	98.0 MHz (1 kHz, Mod.)	98.0 MHz	DC Volt meter to TP2, TP3	L903	Zero reading on DC volt meter.
2	98.0 MHz (1 kHz, Mod.)	98.0 MHz	Distortion meter to TAPE OUT jack	L904	Minimum distortion
3	98.0 MHz (1 kHz, Mod.)	98.0 MHz	Same as Step 1	VR902	FL display 'TUNED' Indication on receiver with FM SSG output level of 10 $\mu\text{V/m}$



FM RF/IF and MPX Alignment Connection

## 5. MPX Alignment, SM Alignment

### Preparation

1. Switch : Press to FM.
2. Tuner for 98 MHz on band.
3. Signal Generator output level : 1000  $\mu$ V.
- 4 Deviation : 40 kHz, at 100% modulation of composite signal.
5. Connect Signal Generator to FM antenna terminal through FM dummy antenna (75  $\Omega$ ).

Step	19 kHz Modulation Level	Signal Generator Frequency Setting	Equipment Connection	Adjustment Point	Adjust for
1	8% Mod.	Composite to channel 1kHz R	AC voltmeter to TAPE OUT jack of R channel	–	Adjust for about 450mV of audio output
2	8% Mod.	Composite to channel 1 kHz L	AC voltmeter to TAPE OUT jack of R channel	VR803	AC voltmeter reading should be at least 40 dB below.
3	8% Mod.	Composite to channel 1 kHz R	AC voltmeter to TAPE OUT jack of L channel	VR803	Same as Step 2.
If you could not obtain –40dB readings in Steps 2 and 3 (compared with Step 1 ), readjust VR803 until you obtain –40dB readings for both Steps 2 and 3. Nominal is –45 dB.					

## TROUBLESHOOTING

Symptom	Cause and Remedy
Receiver inoperative (FL indicator does not light)	A) Faulty AC power cord. Replace. B) Defect the power switch. Replace. C) Broken wire in the power transformer. Replace the power transformer. D) Blown power Replace the fuse.
Fuse blows when power is turned on.	A) Defective power transformer. Replace. B) Short the primary or secondary of the transformer circuitry. Repair the trace. C) Damaged rectifier (D241 to D244) or damaged trans (Q262 and Q263). Replace the defective component(s). D) Short circuit in the amplifier circuit. Repair the shorted component(s) in the amplifier circuit.
Power indicator lights but no sound from both channels	A) Speaker switch 1 or 2 defective. Replace the defective switch (es). B) Defect in transistor Q262L/R, Q263L/R on the Main Amp Board. (PCB1). Replace the defective component(s).
Speaker A inoperative	A) Speaker switch A defective. Replace
Speaker B inoperative	A) Speaker switch B defective. Replace.
Speaker works normally but headphones inoperative	A) Headphone plug does not mate with jack. Replace the jack. B) Defective resistors R295L/R. Replace.
PHONO input inoperative	A) Poor contact in phono input jack. Repair or replace the jack. B) Defective phono switch or IC106. Replace.
LOUDNESS has no effect	A) Defective loudness switch. Replace. B) Replace the defective component(s).
FM inoperative	A) Defective front-end. (FE-901) Replace. B) Defective FM switch. Replace the switch

Symptom	Cause and Remedy
FM inoperative	<p>C) Defective transistor Q901, Q904, Q905 and IC'S IC901, IC902, IC903 Replace the defective transistor(s) or IC(s).</p> <p>D) Defective coil L903 or L904. Replace the coil(s).</p> <p>E) Defective lead-in. Repair or replace the lead-in.</p> <p>F) Ceramic filter CF901, CF902 defective. Replace the defective ceramic filter(s).</p> <p>G) Defective controller circuit component. Replace.</p>
Poor multiplex separation	<p>A) Improper adjustment. Readjust VR803. (Refer to MPX Alignment.)</p> <p>B) IC903 defective. Replace.</p> <p>C) Variable resistor VR803 defective. Replace the variable resistor.</p>
STEREO indicator does not light	<p>A) Defective indicator in FL. Replace.</p> <p>B) Improper adjustment of VR903 of tuner board. (PCB2). Make readjustment.</p> <p>C) Defective IC903. Replace the defective component.</p>
FM volume not sufficient	<p>A) If volume from both L and R channels is not loud enough : Front end Section defective. Faulty IC902, Coil L903 Defective C907 of tuner Board (PCB2). If sound of one channel is not loud enough: Defective L906 L/R.</p>
FM Mono has no effect	<p>A) Defective FM MODE switch. Replace.</p>
AM inoperative	<p>A) Damaged IC902 of tuner board. Replace.</p> <p>B) Defective L901, L902, L905 or CF3 of tuner board (PCB2). Replace the defective component(s).</p> <p>C) Resistor R915, R926 defective. Replace the defective component(s).</p> <p>D) Capacitor C906, C922, C926 defective. Replace the defective capacitor(s).</p> <p>E) Defective AM switch Replace.</p> <p>F) Defective varicap diode VD901, VD902. Replace varicap diode(s).</p> <p>G) Damaged AM loop antenna. Repair or replace.</p> <p>H) Defective controller circuit component. Replace.</p>
Bass control has no effect	<p>A) Variable resistor BASS defective. Replace.</p> <p>B) Defective R416L/R, R417L/R, R418L/R, C414L/R, C415L/R Replace the defective component(s).</p>

Symptom	Cause and Remedy
Treble control has no effect	A) Variable resistor TREBLE defective. B) Defective C417L/R, C418L/R, R419L/R, R420L/R Replace the defective components(s).
Auto tune inoperative (UP/DOWN)	A) Poor contact in Up/Down key. Repair replace. B) Defective IC801 Replace. C) Defective FL Display Replace. D) Defective tuner circuit component. Replace. E) In case of FM only, improper adjustment of FM front-end. Readjust.
Manual tune inoperative (UP/DOWN) (AM or FM)	A) Poor contact in Up/Down key. Replace. B) Defective IC801. Replace.
Memory setting (keys 1-10) inoperative	A) Poor contact in memory keys 1-10. Replace. B) Poor contact in memory set key. Replace. C) Defective IC801. Replace the defective component.
FL inoperative	A) FL defective. Replace. B) Defective IC801. Replace. C) Defective X-TAL 801. Replace.
Noise Volume control	A) Defective IC301. Replace. B) Defective capacitor C304 or C305 Replace the defective capacitor(s).
Remote Control Unit inoperative	A) Weak Battery. Replace. B) Defective. Replace. C) Defective IC801 or Sensor 801 (CPU Board) or IC01. Replace.

## GENERAL UNIT PARTS LIST

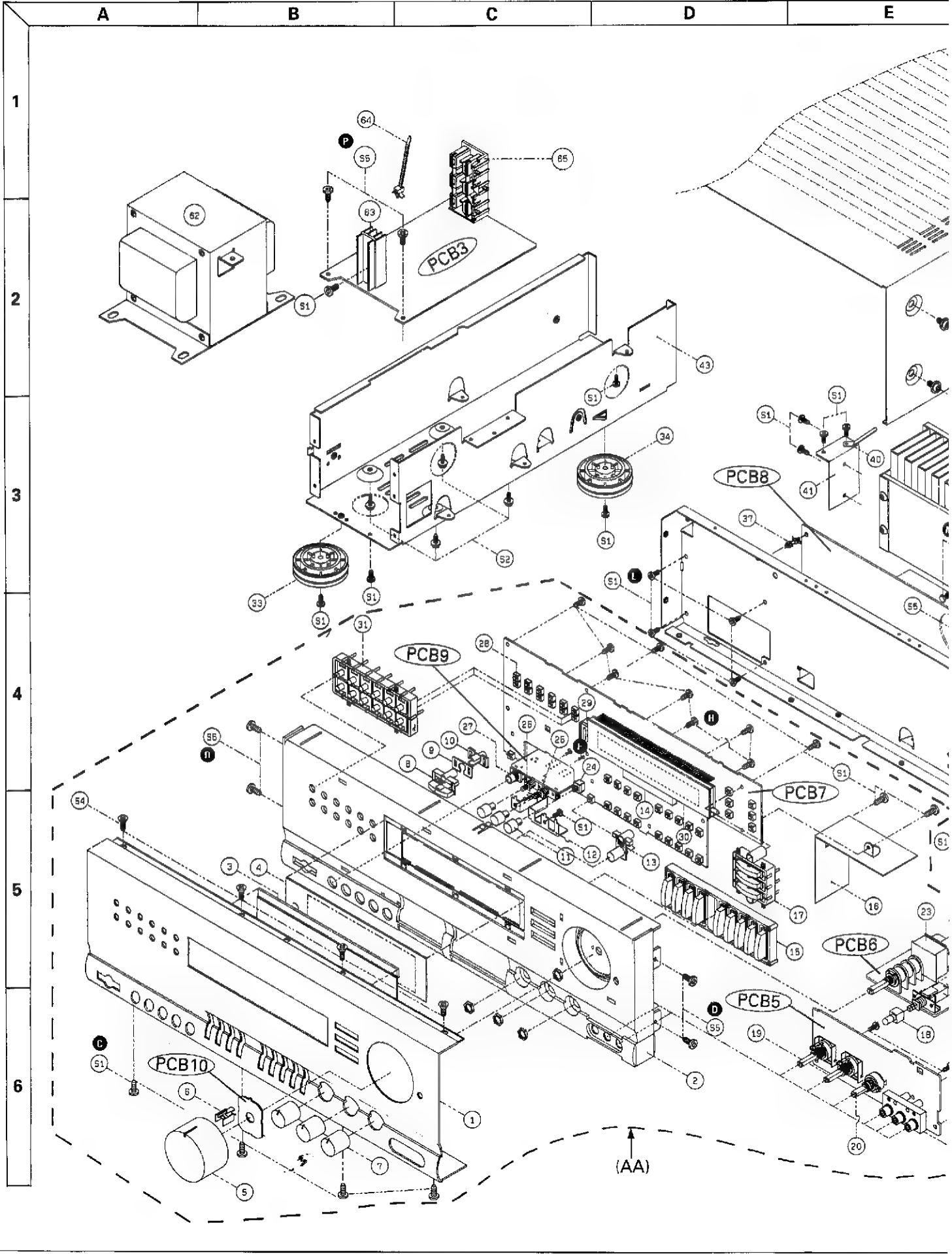
Ref. No.	Description	Mfr. Part No.	Q'ty	Version
<b>CABINET AND CHASSIS</b>				
1	Panel, Front	048602019312	1	
2	Body, Front	8521008910	1	
3	Window, FL	048553020111	1	
4	Filter, FL	048535042611	1	
5	Knob, Volume	048643006711	1	
6	Indicator, Volume	8555049210	1	
7	Knob, Rotary	048545126311	3	
8	Button, Power	048543061011	1	
9	Light Shield	8535042910	1	
10	Indicator, Power	8555048710	1	
11	Button, Speaker	048545124111	3	
12	Bracket Shield	6165148210	1	
13	Button, Source	048543060911	1	
14	Sponge	6715020730	1	
15	Button, Seesaw	048543060811	1	
16	Shield Fence	6163114510	1	
17	Button, Tuning	048543059711	1	
18	Button Loud	048545124211	1	
19	Volume, Rotary (Bass/Treble)	3208049510	2	
20	Volume, Rotary (Balance)	3208052010	1	
21	Jack, RCA, 3P	4438109710	1	
22	Switch, Push	4628059610	1	
23	Volume, Motor	3228019410	1	
24	Switch, Push	4628054410	1	
25(SW291)	Switch, Push	4628043810	1	
26(SW292)	Switch, Push	4628049210	1	
27	Jack, Phone	4438005010	1	
28	Switch Tact	4658003710	38	
29(SEN801)	Remote Sensor, TFMT5380 (38 kHz)	2408005001	1	
30(FIP801)	FIP, 12 LM 8, FL Display	3238130901	1	
31	Button, Preset	048543059611	1	
32	Frame Right	6122632210	1	
33	Foot, ABS, Gold, Hot stamping	046033102511	2	
34	Foot, ABS, Balck	6033102510	2	
35	Cover Bottom	6122418610	1	
36	Chassis, Front	6122214810	1	
37	Fastener	6528300110	2	
38	Heatsink Power	7502008310	1	
39	Bracket Heat Sink Right	6505135910	1	
40	Clamp Wire	6525002210	2	
41	Bracket Heat Sink Left	6505135810	1	
42	Bracket, PCB	6505130010	2	
43	Frame left	6122632110	1	
44	Heatsink, Regulator TR.	7505206220	1	
45	Heatsink, Regulator TR.	7505202410	5	
46	Jack, RCA, 2P	4438108510	1	
47	Jack, RCA, 6P	4438108710	2	
48	Jack, RCA, 3P	4438108810	4	
49	Jack, RCA, 2P, Yellow	4438114210	1	
50	Terminal Speaker, 8P	4408105810	1	
51	Terminal Speaker, 4P	4408105410	1	
52	Terminal Speaker, 2P	4408108710	1	
53	Jack, Multiroom	4438006510	2	
54	Jack, RCA, 4P	4438108610	2	
55	Terminal, Antenna	4408108210	1	EUROPE
(55)	Terminal, Antenna	4408108310	1	USA/CANADA
56	Chassis, Back	048102041252	1	EUROPE
(56)	Chassis, Back	048102041222	1	USA/CANADA
57	Ground Terminal	4408103720	1	
58	Plug, Jumper	4328208510	2	
59	Cord, AC Power	43080002310	1	EUROPE
(59)	Cord, AC Power	4308001410	1	USA/CANADA
60	Stopper, AC Cord	6518000111	1	EUROPE
(61)	Stopper, AC Cord	6518000710	1	USA/CANADA
61	Cover, Top	048122022611	1	
62	△ Power Transformer, 230 V, 50 Hz	2826001117	1	EUROPE
(62)	△ Power Transformer, 120 V, 60 Hz	2826009967	1	USA/CANADA
63	Heatsink (H:30), Regulator TR.	7505206210	1	
64	Tie locking	6528002810	1	
65	△ Outlet, 1P	4448103610	1	EUROPE
(65)	△ Outlet, 3P	4448102910	1	USA/CANADA
66	Jack RCA, 2P	4438111510	1	
<b>HEADWARE KIT</b>				
S1	Screw #2 BTC 3 X 8 B	8109230083	37	
S2	Screw WSAM 4 X 8 B	8159440083	10	
S3	Screw #2 BTC 3 X 6 B	8109230063	5	
S4	Screw #2 FTC 3 X 8 B	8129230083	9	
S5	Screw #2 WPTC 3 X 8 Y	8159230081	11	
S6	HEX MSPW 3 X 12 Y	8099130121	6	
S7	HEX MSPW 3 X 16 Y	8099130161	2	
S8	Screw, Heatsink	8185000310	4	
S9	Screw #1 PTC 3 X 10 B	8119130103	21	
S10	Screw Ground	8155000710	2	
<b>MISCELLANEOUS</b>				
	Card Cable, 18P, 140mm	4118618149	1	
	Card Cable, 15P, 180mm	4118615189	1	
	Card Cable, 12P, 450mm	4118612455	1	
	Card Cable, 19P, 450mm	4118619459	1	
	Ass'y Poistor	052438012202	1	
	Poistor, PTH9M04BE222	2438012200	2	

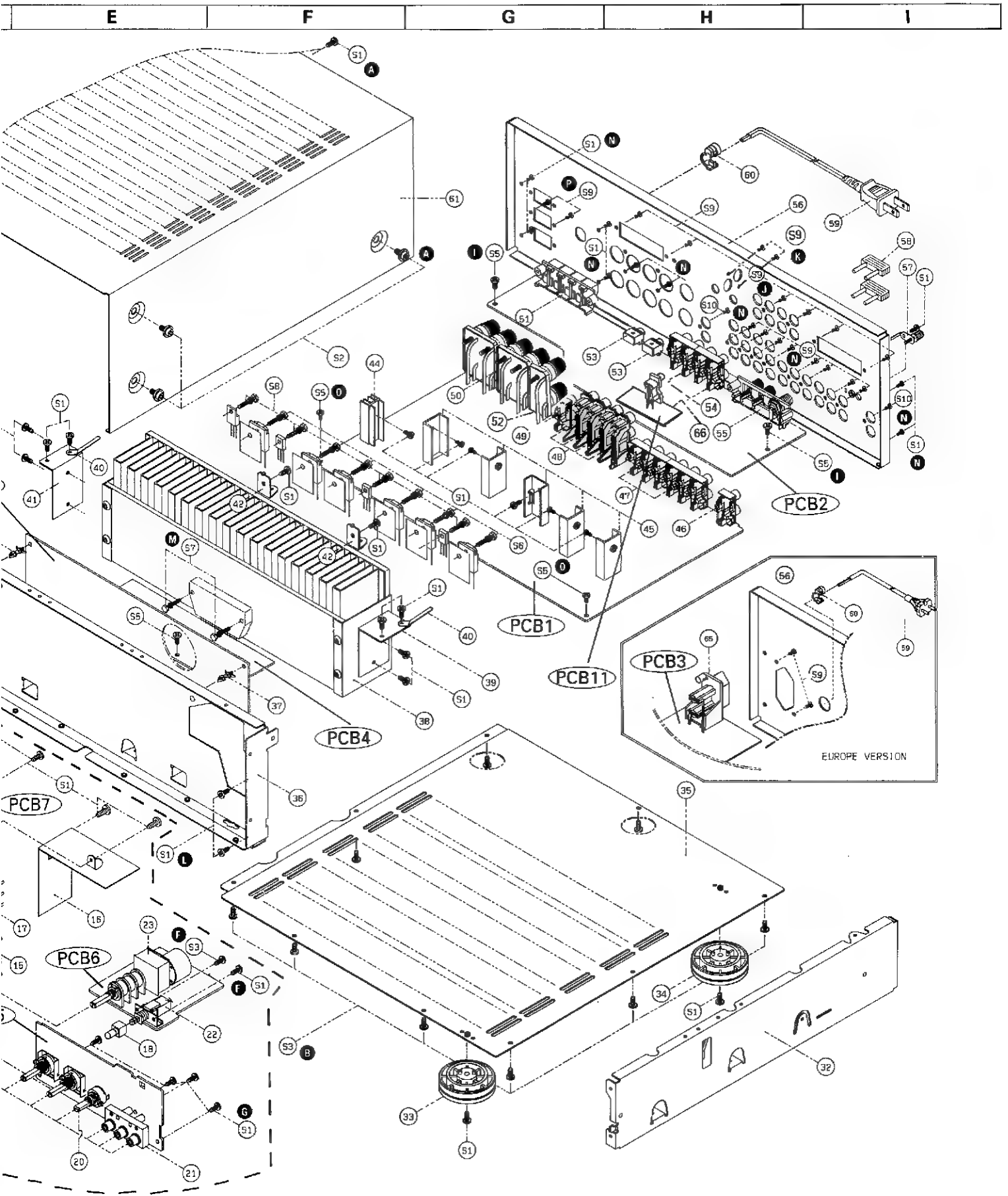
## PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol  $\Delta$  in the parts list are of special significance to safety. When replacing a component identified with  $\Delta$ , use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual. Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.



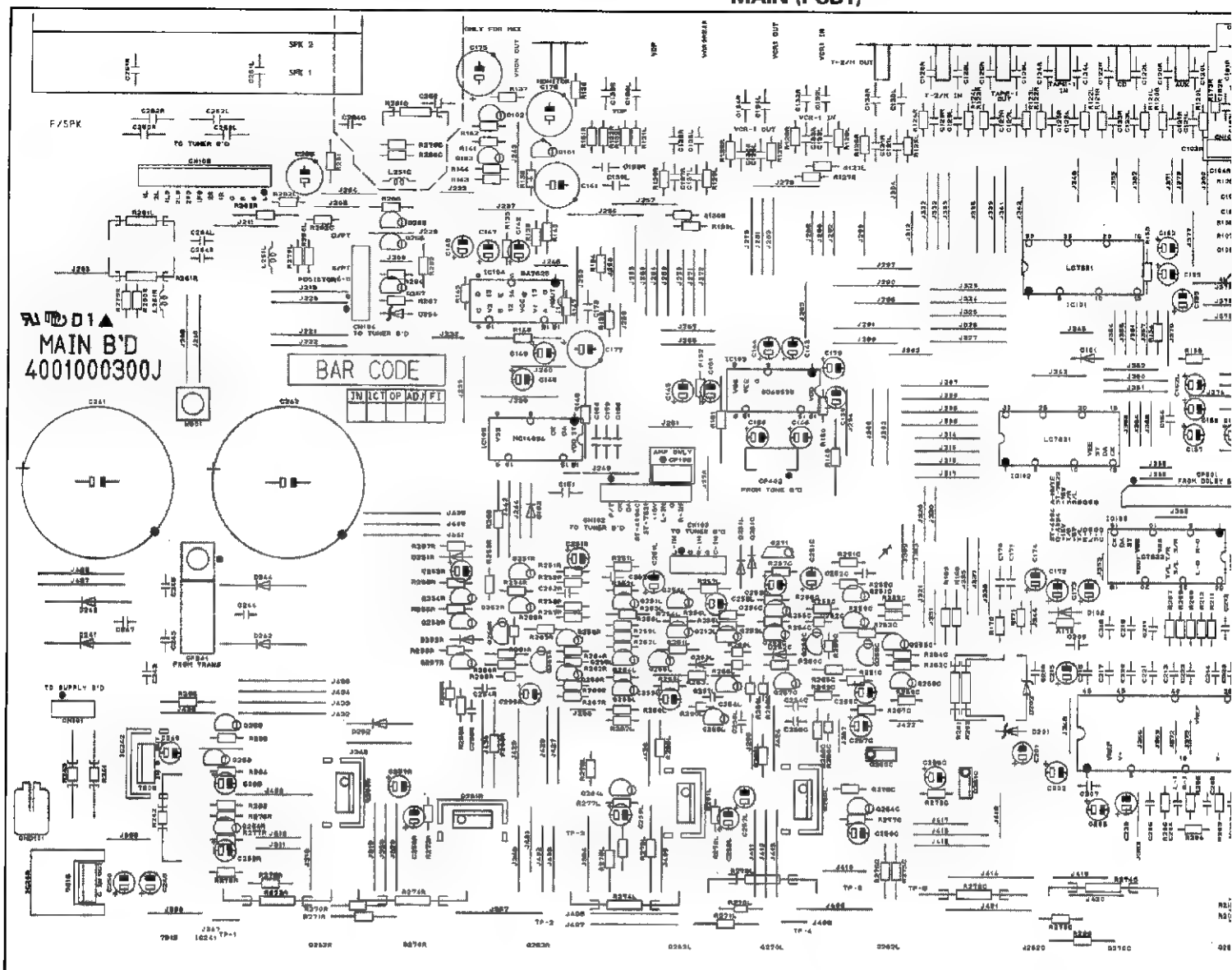
GENERAL UNIT



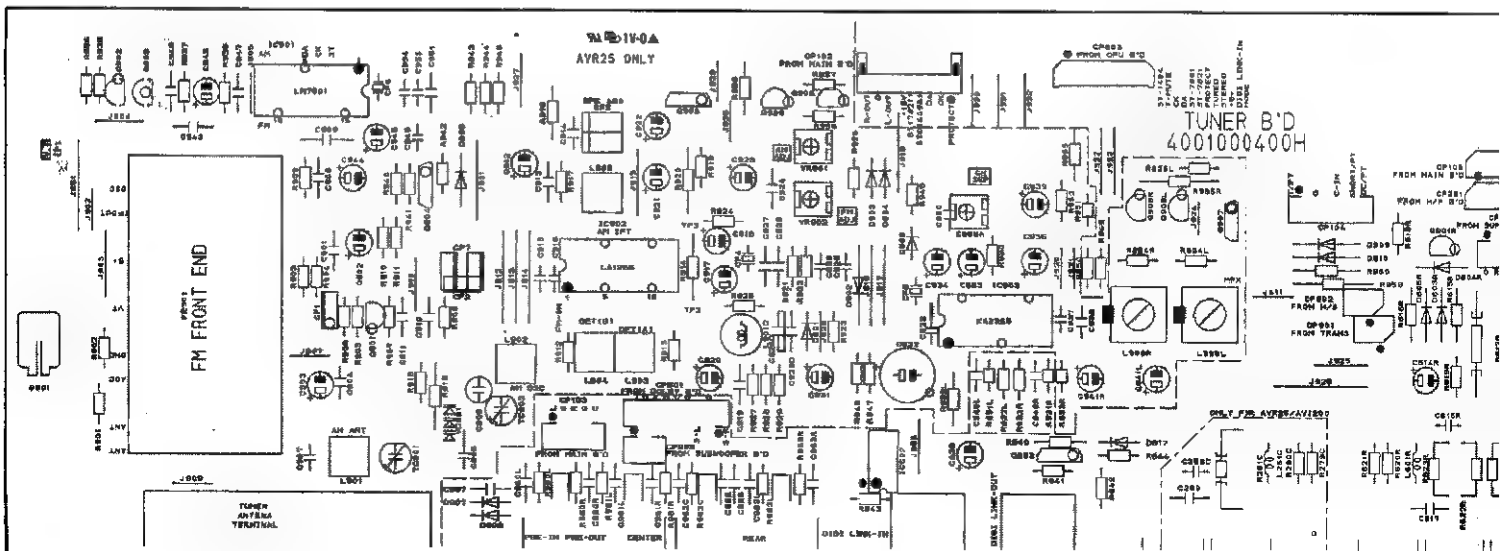


## PRINTED CIRCUIT BOARDS

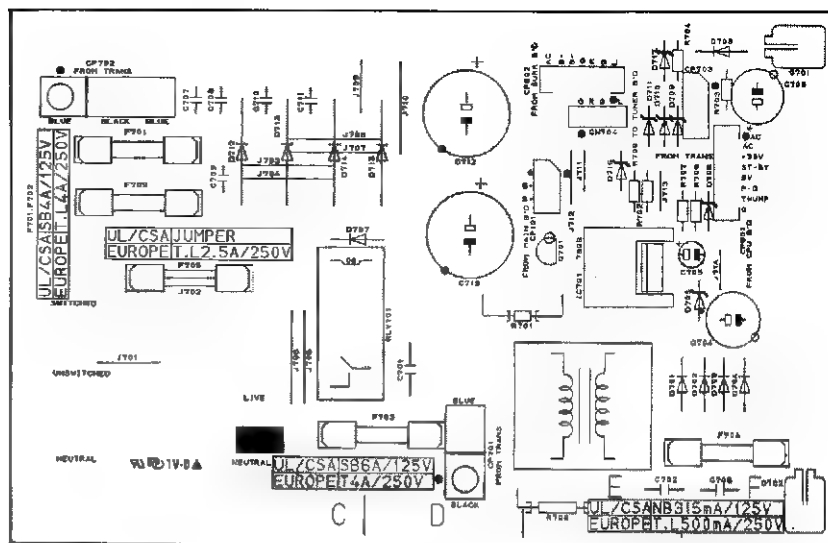
## MAIN (PCB1)



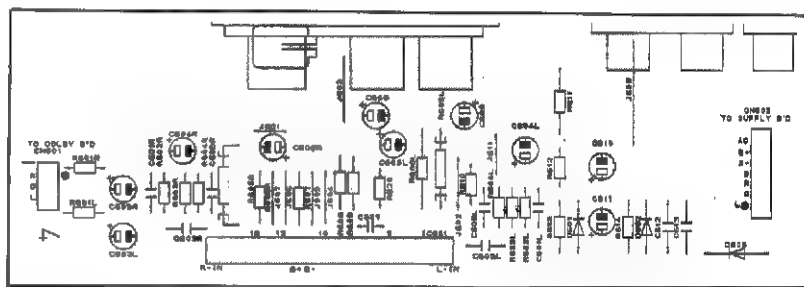
## TUNER (PCB2)



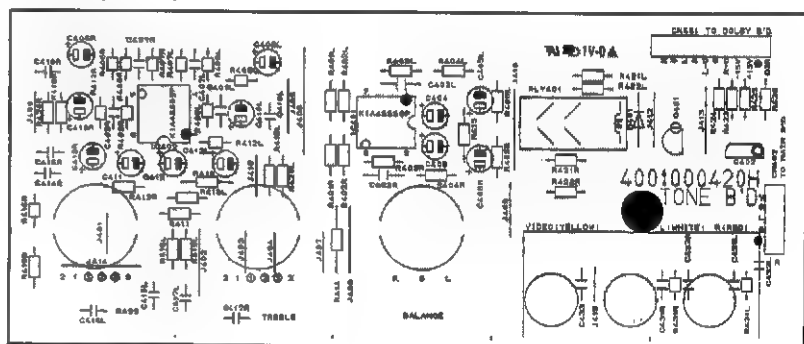
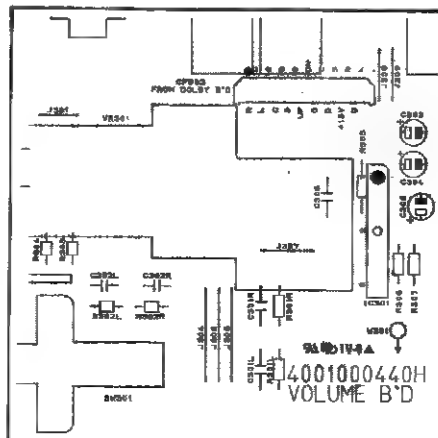
### POWER SUPPLY (PCB3)



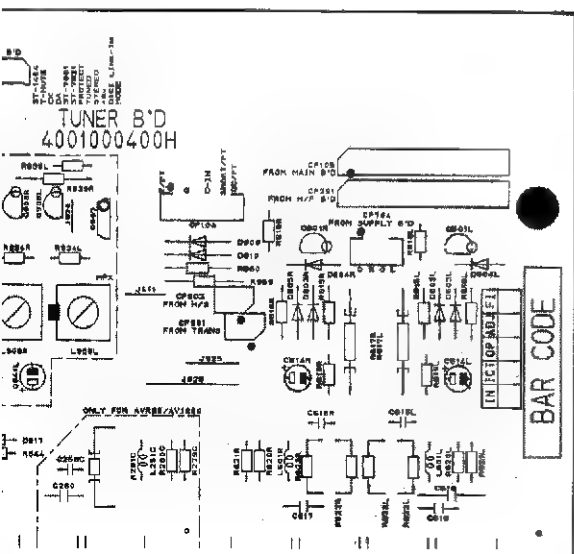
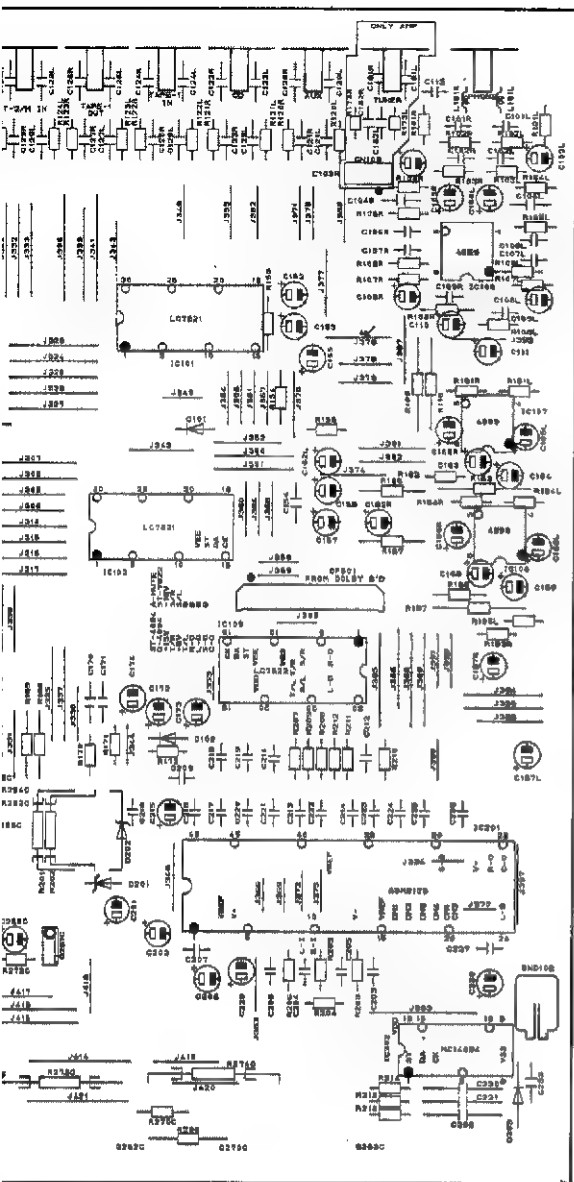
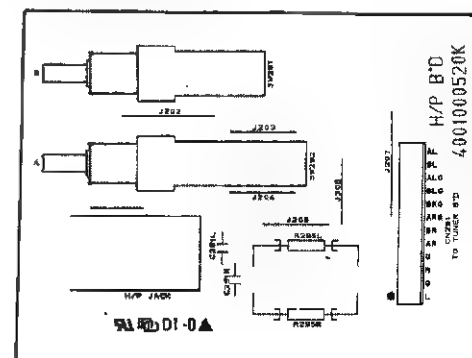
### SURROUND (PCB4)



**TONE (PCB5)**

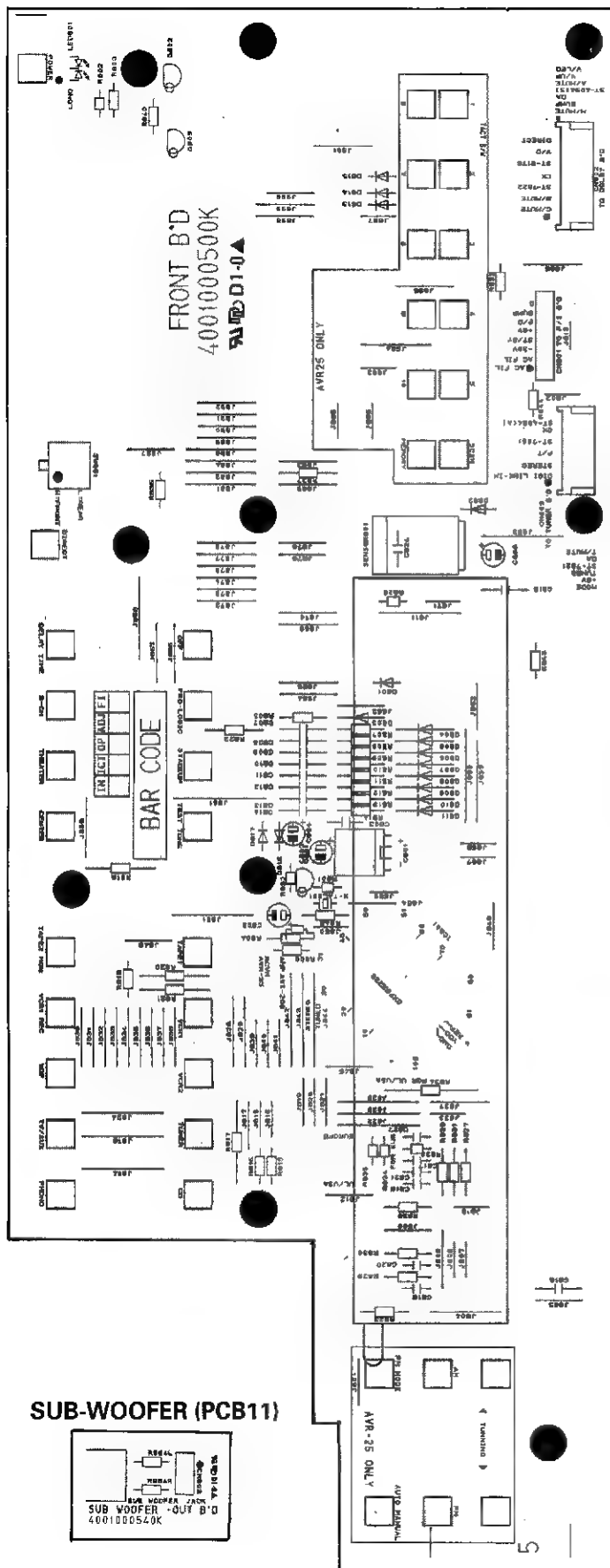
**VOLUME (PCB6)**

### HEADPHONE (PCB9)

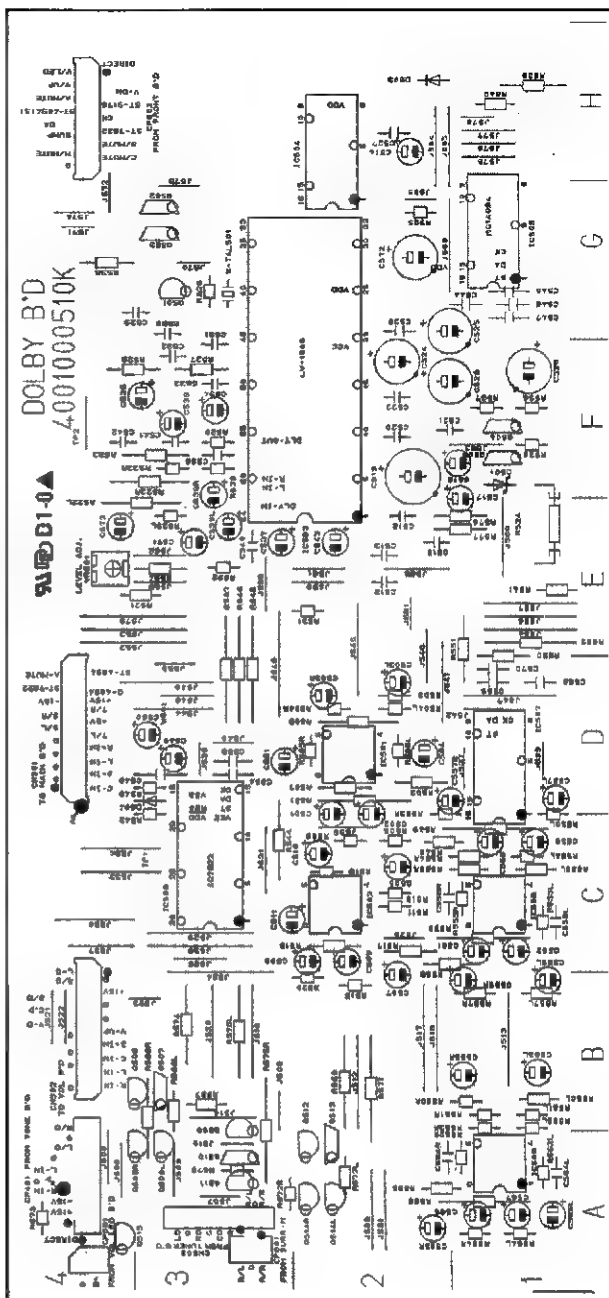


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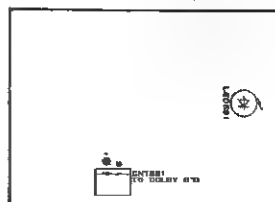
### FRONT (PCB7)



**DOLBY (PCB8)**



**VOLUME LED (PCB10)**



ELECTRICAL PARTS LIST

PRODUCT SAFETY NOTICE : Products marked with  $\Delta$  have special characteristics important to safety.  
If you replace any of these components, read carefully the product safety notice in this manual.  
Don't degrade the safety of the product through improper servicing.  
Resistor/Capacitor tolerance - D : ( $\pm 0.5\%$ ), J : ( $\pm 5\%$ ), K : ( $\pm 10\%$ ), M : ( $\pm 20\%$ ), Z : (+80, - 20%)

Ref. No.	Description	Mfr. Part No.	Q'ty	Version	Ref. No.	Description	Mfr. Part No.	Q'ty	Version
PCB1 ASSEMBLY P.C. BOARD MAIN					C257C	Electrolytic SA	10	uF 50 V M	3479210071 1
CAPACITORS					C257L/R	Electrolytic SA	10	uF 50 V M	3479210071 2
C101L/R	Ceramic Tubular	100	pF 50 V J	3519101935 2 EUROPE	C258C	Electrolytic SA	4.7	uF 50 V M	3479247971 1
C102L/R	Ceramic Tubular	100	pF 50 V J	3519101935 2	C258L/R	Electrolytic SA	4.7	uF 50 V M	3479247971 2
C103L/R	Electrolytic SA	4.7	uF 50 V M	3479247971 2	C259C	Electrolytic SA	10	uF 35 V M	3479210064 1
C104L/R	Ceramic Tubular	2200	pF 50 V J	3519222935 2 EUROPE	C259L/R	Electrolytic SA	10	uF 35 V M	3479210064 2
C105L/R	Electrolytic SA	33	uF 25 V M	3479233041 2	C280	Ceramic Tubular	2200	pF 50 V J	3519222915 1
C106L/R	Mylar	0.002	uF 100 V J	3679182120 2	C280L/R	Ceramic Tubular	2200	pF 50 V J	3519222935 2 EUROPE
C107L/R	Mylar	0.006	uF 100 V J	3679562120 2	C281L/R	Ceramic Tubular	2200	pF 50 V J	3519222935 2 EUROPE
C108L/R	Electrolytic SA	1	uF 50 V M	3479210971 2	C282L/R	Ceramic Tubular	2200	pF 50 V J	3519222935 2 EUROPE
C109L/R	Mylar	0.002	uF 100 V J	3679182120 2	C284C	Mylar	0.047	uF 100 V J	3679473120 1
C110/C111	Electrolytic SG	47	uF 25 V M	3479347041 2	C284L/R	Mylar	0.047	uF 100 V J	3679473120 2
C112	Ceramic Disc	0.01	uF 50 V Z	3579103530 1	C285	Electrolytic SA	1	uF 100 V M	3479210997 1
C120L/R	Ceramic Tubular	100	pF 50 V J	3519101935 2 EUROPE	C286	Electrolytic SG	470	uF 10 V M	3479347121 1
C121L/R	Ceramic Tubular	100	pF 50 V J	3519101935 2 EUROPE	CONNECTORS				
C122L/R	Ceramic Tubular	100	pF 50 V J	3519101935 2 EUROPE	CN101	Lead Assy, 3P, 200 mm	436103203331	1	
C123L/R	Ceramic Tubular	100	pF 50 V J	3519101935 2 EUROPE	CN102	Lead Assy, 8P, 100 mm	436208103332	1	
C124L/R	Ceramic Tubular	100	pF 50 V J	3519101935 2 EUROPE	CN103	Lead Assy, 5P, 180 mm	436205183332	1	
C125L/R	Ceramic Tubular	100	pF 50 V J	3519101935 2 EUROPE	CN104	Lead Assy, 7P, 140 mm	436207143332	1	
C126L/R	Ceramic Tubular	100	pF 50 V J	3519101935 2 EUROPE	CN105	Lead Assy, 12P, 140 mm	435112143401	1	
C127L/R	Ceramic Tubular	100	pF 50 V J	3519101935 2 EUROPE	CP108	Wafer, 3P	4428518210	1	
C128L/R	Ceramic Tubular	100	pF 50 V J	3519101935 2 EUROPE	CN106	Lead Assy, 3P, 200 mm	436403203232	1	
C129L/R	Ceramic Tubular	100	pF 50 V J	3519101935 2 EUROPE	CP241	Plug LV AC, 3P	4428525790	1	
C130L/R	Ceramic Tubular	100	pF 50 V J	3519101935 2 EUROPE	CP402	Wafer 5P	4428518410	1	
C131L/R	Ceramic Tubular	100	pF 50 V J	3519101935 2 EUROPE	CP501	FPC Plug 19P	4428528310	1	
C132L/R	Ceramic Tubular	100	pF 50 V J	3519101935 2 EUROPE		Plug LV AC, 1P	4428525860	1	
C133L/R	Ceramic Tubular	100	pF 50 V J	3519101935 2 EUROPE	DIODES				
C134L/R	Ceramic Tubular	100	pF 50 V J	3519101935 2 EUROPE	D101-D103	1N4148M, Switching	2058322101	3	
C135L/R	Ceramic Tubular	100	pF 50 V J	3519101935 2 EUROPE	D201/D202	Diode Zener, DZ 5.6BSC	2258599121	2	
C136L/R	Ceramic Tubular	100	pF 50 V J	3519101935 2 EUROPE	D203	1N4148M, Switching	2058322101	1	
C137L/R	Ceramic Tubular	100	pF 50 V J	3519101935 2 EUROPE	$\Delta$ D241-D244	PX6A03, Rectifier	2058100138	4	
C138L/R	Ceramic Tubular	100	pF 50 V J	3519101935 2 EUROPE	D251C	1N4148M, Switching	2058322101	1	
C139L/R	Ceramic Tubular	100	pF 50 V J	3519101935 2 EUROPE	D251L/R	1N4148M, Switching	2058322101	2	
C140	Electrolytic SA	470	uF 25 V M	3479233041 1	D252C	1N4148M, Switching	2058322101	1	
C141	Electrolytic SG	470	uF 10 V M	3479347121 1	D252L/R	1N4148M, Switching	2058322101	2	
C142	Electrolytic SA	33	uF 25 V M	3479233041 1	D254	Diode Zener, DZ 12.0BSC	2258599116	1	
C143-C148	Electrolytic SA	10	uF 50 V M	3479210071 4	INTEGRATED CIRCUITS				
C147/C148	Electrolytic SA	33	uF 25 V M	3479233041 2	IC101/IC102	LC7821	2168017132	2	
C149	Electrolytic SA	2.2	uF 50 V M	3479222971 1	IC103	GD4052B	2138001114	1	
C150-C153	Electrolytic SG	47	uF 25 V M	3479347041 4	IC104	BA7825, Video Switching	2168027108	1	
C154	Ceramic Disc	0.01	uF 50 V Z	3579103530 1	IC105	MC14094BCP	2138009115	1	
C155	Electrolytic SA	1	uF 50 V M	3479210971 1	IC108-IC108	KIA4559P/KIA755559P, OP Amp	2168208104	3	
C156/C157	Electrolytic SG	47	uF 25 V M	3479347041 2	IC109	LC7822	2168017139	1	
C158	Ceramic Tubular	1000	pF 50 V J	3519102835 1	IC201	SSM-2128A	2168000122	1	
C159/C160	Ceramic Tubular	100	pF 50 V J	3519101935 2	IC202	MC14094BCP	2138009115	1	
C161	Ceramic Tubular	0.1	uF 50 V Z	3519104835 1	$\Delta$ IC241	GL7815, Regulator	2168601105	1	
C162L/R	Electrolytic SA	4.7	uF 50 V M	3479247971 2	$\Delta$ IC242	GL7806, Regulator	2168601110	1	
C163/C164	Electrolytic SG	47	uF 25 V M	3479347041 2	$\Delta$ IC243	GL7915, Regulator	2168601111	1	
C165L/R	Electrolytic SA	4.7	uF 50 V M	3479247971 2	COILS				
C166L/R	Electrolytic SA	10	uF 50 V M	3479210071 2	L101L/R	Inductor, 50 uH	2648801470	2 EUROPE	
C167L/R	Electrolytic SA	10	uF 50 V M	3479210071 2	L251C	Inductor, 0.5 uH	2648001010	1	
C168/C169	Electrolytic SG	47	uF 25 V M	3479347041 2	L251L/R	Inductor, 0.5 uH	2648001010	2	
C170/C171	Ceramic Tubular	100	pF 50 V J	3519101935 2	TRANSISTORS				
C172	Electrolytic SG	47	uF 25 V M	3479347041 1	Q101-Q103	BKTA1268Y/KTA1015Y, PNP	2208208105	3	
C173	Electrolytic SA	1	uF 50 V M	3479210971 1	Q251C	KTA2400-GG, PNP	2208008100	1	
C174	Electrolytic SG	47	uF 25 V M	3479347041 1	Q251L/R	KTA2400-GG, PNP	2208008100	2	
C175-C177	Electrolytic SG	470	uF 10 V M	3479347121 3	Q252C	KTA2400-GG, PNP	2208008100	1	
C178	Ceramic Tubular	0.1	uF 50 V Z	3519104835 1	Q252L/R	KTA2400-GG, PNP	2208008100	2	
C179/C180	Electrolytic SA	10	uF 50 V M	3479210071 2	Q253C	KTA2400-GG, PNP	2208008100	1	
C201/C202	Electrolytic SG	220	uF 10 V M	3479322121 2	Q253L/R	KTA2400-GG, PNP	2208008100	2	
C203-C205	Mylar	0.01	uF 100 V J	3679103120 3	Q254C	BKTA1268Y/KTA1015Y, PNP	2208208105	1	
C206/C207	Mylar	0.22	uF 63 V K	3679224297 2	Q254L/R	BKTA1268Y/KTA1015Y, PNP	2208208105	2	
C208	Electrolytic SA	4.7	uF 50 V M	3479247971 1	Q255C	KTC2240BL/KTC3200, NPN	2208608108	1	
C209-C212	Mylar	0.1	uF 63 V K	3679104297 4	Q255L/R	KTC2240BL/KTC3200, NPN	2208608108	2	
C213/C214	Poly	680	pF 50 V J	3519681110 2	Q256C	KTC2240BL/KTC3200, NPN	2208608108	1	
C215	Electrolytic SA	4.7	uF 50 V M	3479247971 1	Q256L/R	KTC2240BL/KTC3200, NPN	2208608108	2	
C216/C217	Mylar	0.22	uF 63 V K	3679224297 2	Q257C	KTA949/KTA1024Y, PNP	2208208102	1	
C218-C221	Mylar	0.33	uF 63 V K	3679334297 4	Q257L/R	KTA949/KTA1024Y, PNP	2208208102	2	
C222-C225	Mylar	0.022	uF 100 V J	3679223120 4	Q258C	KTC2229/KTC3206Y, NPN	2208608118	1	
C226/C227	Mylar	0.1	uF 63 V K	3679104297 2	Q258L/R	KTC2229/KTC3206Y, NPN	2208608118	2	
C228	Electrolytic SG	100	uF 10 V M	3479310121 1	Q259C	KTA1268/KTA970, PNP	2008208104	1	
C229	Electrolytic SA	10	uF 50 V M	3479210071 1	Q259L/R	KTA1268/KTA970, PNP	2008208104	2	
C230-C232	Ceramic Tubular	100	pF 50 V J	3519101935 3	Q260C	2SC4883A-Y, NPN	2028316100	1	
C233	Ceramic Disc	0.01	uF 50 V Z	3579103530 1	Q260L/R	2SC4883A-Y, NPN	2028316100	2	
$\Delta$ C241/C242	Electrolytic HM	10000	uF 80 V M	3419510345 2	Q261C	2SA1859A-Y, PNP	2028016100	1	
C243-C247	Ceramic Disc	0.01	uF 500 V Z	3509103451 5	Q261L/R	2SA1859A-Y, PNP	2028016100	2	
C248-C250	Electrolytic SA	1	uF 50 V M	3479210971 3	$\Delta$ Q262C	2SC3182N-O, NPN	2028307101	1	
C251C	Electrolytic SG	47	uF 25 V M	3479347041 1	$\Delta$ Q262L/R	2SC3519A, NPN	2028416122	2	
C251L/R	Electrolytic SG	47	uF 25 V M	3479347041 2	$\Delta$ Q263C	2SA1265N-O, PNP	2028007101	1	
C252C	Ceramic Disc	68	pF 50 V J	3579680130 1	$\Delta$ Q263L/R	ASA1386A, PNP	2028116108	2	
C252L/R	Ceramic Disc	68	pF 50 V J	3579680130 2	Q264C	KTC3198Y/KTC1815Y, NPN	2208608104	1	
C253C	Electrolytic SA	1	uF 50 V M	3479210971 1	Q264L/R	KTC3198Y/KTC1815Y, NPN	2208608104	2	
C253L/R	Electrolytic SA	1	uF 50 V M	3479210971 2	Q265-Q267	KTC3198Y/KTC1815Y, NPN	2208608104	3	
C254C	Ceramic Disc	3	pF 50 V D	3579309030 1	Q268	BKTA1268Y/KTA1015Y, PNP	2208208105	1	
C254L/R	Ceramic Disc	3	pF 50 V D	3579309030 2					
C255C	Electrolytic SG	470	uF 10 V M	3479347121 1					
C255L/R	Electrolytic SG	470	uF 10 V M	3479347121 2					
C256C	Ceramic Tubular	100	pF 50 V J	3519101935 1					
C256L/R	Ceramic Tubular	100	pF 50 V J	3519101935 2					

Ref. No.	Description	Mfr. Part No.	Q'ty	Version
Q269	KTC3188Y/KTC1815Y, NPN	2208608104	1	
Q270C	2SC4137, NPN, Bias	2008622110	1	
Q270L/R	2SC4137, NPN, Bias	2008622110	2	
Q271	DTC114YS	2208622106	1	
<b>RESISTORS</b>				
R101L/R	Carbon Film	1 kohm 1/5 W J	3069102970	2
R102L/R	Carbon Film	91 kohm 1/5 W J	3069913970	2
R105L/R	Carbon Film	91 kohm 1/5 W J	3069913970	2
R104L/R	Carbon Film	520 ohm 1/5 W J	3069821970	2
R105L/R	Carbon Film	43 kohm 1/5 W J	3069433970	2
R106L/R	Carbon Film	560 kohm 1/5 W J	3069564970	2
R107L/R	Carbon Film	560 ohm 1/5 W J	3069561970	2
R108L/R	Carbon Film	100 kohm 1/5 W J	3069104970	2
R109/R110	Carbon Film	220 ohm 1/5 W J	3069221970	2
R120L/R	Carbon Film	470 ohm 1/5 W J	3069471970	2
R121L/R	Carbon Film	470 ohm 1/5 W J	3069471970	2
R122L/R	Carbon Film	470 ohm 1/5 W J	3069471970	2
R123L/R	Carbon Film	470 ohm 1/5 W J	3069471970	2
R124L/R	Carbon Film	1 kohm 1/5 W J	3069102970	2
R125L/R	Carbon Film	470 ohm 1/5 W J	3069471970	2
R126L/R	Carbon Film	470 ohm 1/5 W J	3069471970	2
R127L/R	Carbon Film	100 kohm 1/5 W J	3069104970	2
R128L/R	Carbon Film	470 ohm 1/5 W J	3069471970	2
R129L/R	Carbon Film	470 ohm 1/5 W J	3069471970	2
R130L/R	Carbon Film	100 kohm 1/5 W J	3069104970	2
R131L/R	Carbon Film	470 ohm 1/5 W J	3069471970	2
R132L/R	Carbon Film	100 kohm 1/5 W J	3069104970	2
R133-R138	Carbon Film	75 ohm 1/5 W J	3069750970	5
R139-R144	Carbon Film	100 ohm 1/5 W J	3069101970	6
R145	Carbon Film	75 ohm 1/5 W J	3069750970	1
R146	Carbon Film	10 ohm 1/5 W J	3069100970	1
R147/R148	Carbon Film	100 ohm 1/5 W J	3069101970	2
R149-R152	Carbon Film	3.3 kohm 1/5 W J	3069332970	4
R153/R154	Carbon Film	220 ohm 1/5 W J	3069221970	2
R155	Carbon Film	100 kohm 1/5 W J	3069104970	1
R156/R157	Carbon Film	220 ohm 1/5 W J	3069221970	2
R161L/R	Carbon Film	100 kohm 1/5 W J	3069104970	2
R162/R163	Carbon Film	220 ohm 1/5 W J	3069221970	2
R164L/R	Carbon Film	100 kohm 1/5 W J	3069104970	2
R165L/R	Carbon Film	100 kohm 1/5 W J	3069104970	2
R168/R167	Carbon Film	220 ohm 1/5 W J	3069221970	2
R169/R169	Carbon Film	100 ohm 1/5 W J	3069101970	2
R170/R171	Carbon Film	220 ohm 1/5 W J	3069221970	2
R172	Carbon Film	100 kohm 1/5 W J	3069104970	1
R201/R202	Metal Film	150 ohm 1 W J	3029151470	2
R203-R205	Carbon Film	22 kohm 1/5 W J	3069223970	3
R206	Carbon Film	10 ohm 1/5 W J	3069106970	1
R207	Carbon Film	47 kohm 1/5 W J	3069473970	1
R208	Carbon Film	15 kohm 1/5 W J	3069153970	1
R209/R210	Carbon Film	7.5 kohm 1/5 W J	3069752970	2
R211	Carbon Film	47 kohm 1/5 W J	3069473970	1
R212	Carbon Film	15 kohm 1/5 W J	3069153970	1
R214-R216	Carbon Film	1 kohm 1/5 W J	3069102970	3
R241	Metal Film	4.7 ohm 2 W J	3029479570	1
R242/R243	Metal Film	10 ohm 2 W J	3029100570	2
R251C	Carbon Film	33 kohm 1/5 W J	3069333970	1
R251L/R	Carbon Film	33 kohm 1/5 W J	3069333970	2
R252C	Carbon Film	330 ohm 1/5 W J	3069331970	1
R252L/R	Carbon Film	330 ohm 1/5 W J	3069331970	2
R253C	Carbon Film	360 ohm 1/5 W J	3069361970	1
R253L/R	Carbon Film	360 ohm 1/5 W J	3069361970	2
R254C	Carbon Film	390 ohm 1/5 W J	3069391970	1
R254L/R	Carbon Film	390 ohm 1/5 W J	3069391970	2
R255C	Carbon Film	270 ohm 1/5 W J	3069271970	1
R255L/R	Carbon Film	270 ohm 1/5 W J	3069271970	2
R256C	Carbon Film	10 kohm 1/5 W J	3069103970	1
R256L/R	Carbon Film	10 kohm 1/5 W J	3069103970	2
R257C	Carbon Film	33 kohm 1/5 W J	3069333970	1
R257L/R	Carbon Film	33 kohm 1/5 W J	3069333970	2
R258C	Carbon Film	1.5 kohm 1/5 W J	3069152970	1
R258L/R	Carbon Film	1.5 kohm 1/5 W J	3069152970	2
R259C	Carbon Film	1.5 kohm 1/5 W J	3069152970	1
R259L/R	Carbon Film	1.5 kohm 1/5 W J	3069152970	2
R260C	Carbon Film	560 ohm 1/5 W J	3069561970	1
R260L/R	Carbon Film	560 ohm 1/5 W J	3069561970	2
R261C	Carbon Film	560 ohm 1/5 W J	3069561970	1
R261L/R	Carbon Film	560 ohm 1/5 W J	3069561970	2
R262C	Carbon Film	560 ohm 1/5 W J	3069561970	1
R262L/R	Carbon Film	560 ohm 1/5 W J	3069561970	2
R263C	Carbon Film	560 ohm 1/5 W J	3069561970	1
R263L/R	Carbon Film	560 ohm 1/5 W J	3069561970	2
R264C	Carbon Film	560 ohm 1/5 W J	3069561970	1
R264L/R	Carbon Film	560 ohm 1/5 W J	3069561970	2
R265C	Carbon Film	1.3 kohm 1/5 W J	3069132970	1
R265L/R	Carbon Film	1.3 kohm 1/5 W J	3069132970	2
R266C	Carbon Film	22 kohm 1/5 W J	3069223970	1
R266L/R	Carbon Film	22 kohm 1/5 W J	3069223970	2
R267C	Carbon Film	22 kohm 1/5 W J	3069223970	1
R267L/R	Carbon Film	22 kohm 1/5 W J	3069223970	2
R268C	Carbon Film	100 ohm 1/5 W J	3069101970	1
R268L/R	Carbon Film	100 ohm 1/5 W J	3069101970	2
R269C	Carbon Film	100 ohm 1/5 W J	3069101970	1
R269L/R	Carbon Film	100 ohm 1/5 W J	3069101970	2
R270C	Metal Film	1.21 kohm 1/5 W F	3027121125	1
R270L/R	Metal Film	1.21 kohm 1/5 W F	3027121125	2
R271C	Carbon Film	470 ohm 1/5 W J	3069471970	1
R271L/R	Metal Film	442 ohm 1/5 W F	3027442025	2

Ref. No.	Description	Mfr. Part No.	Q'ty	Version
R272C	Carbon Film	82 ohm 1/5 W J	3069820970	1
R272L/R	Carbon Film	82 ohm 1/5 W J	3069820970	2
R273C	Cement	0.27 ohm 5 W J	3059278782	1
R273L/R	Cement	0.27 ohm 5 W J	3059278782	2
R274C	Cement	0.27 ohm 5 W J	3059278782	1
R274L/R	Cement	0.27 ohm 5 W J	3059278782	2
R275C	Carbon Film	1.8 kohm 1/5 W J	3069182970	1
R275L/R	Carbon Film	1.8 kohm 1/5 W J	3069182970	2
R276C	Carbon Film	1.5 kohm 1/5 W J	3069152970	1
R276L/R	Carbon Film	1.5 kohm 1/5 W J	3069152970	2
R277C	Carbon Film	910 ohm 1/5 W J	3069911970	1
R277L/R	Carbon Film	910 ohm 1/5 W J	3069911970	2
R278C	Carbon Film	6.8 kohm 1/5 W J	3069682970	1
R278L/R	Carbon Film	6.8 kohm 1/5 W J	3069682970	2
R279C	Carbon Film	22 ohm 1/5 W J	3069220970	1
R279L/R	Carbon Film	22 ohm 1/5 W J	3069220970	2
R280C	Carbon Film	22 ohm 1/5 W J	3069220970	1
R280L/R	Carbon Film	22 ohm 1/5 W J	3069220970	2
R281C	Carbon Film	22 ohm 1/5 W J	3069220970	1
R281L/R	Metal Film	10 ohm 1 W J	3029100470	2
R282C	Carbon Film	24 kohm 1/5 W J	3069243970	1
R282L/R	Carbon Film	24 kohm 1/5 W J	3069243970	2
R283	Carbon Film	68 kohm 1/5 W J	3069683970	1
R284	Carbon Film	100 kohm 1/5 W J	3069104970	1
R285	Carbon Film	3.3 kohm 1/5 W J	3069332970	1
R286	Carbon Film	220 ohm 1/5 W J	3069221970	1
R287	Carbon Film	10 kohm 1/5 W J	3069103970	1
R288	Carbon Film	150 kohm 1/5 W J	3069154970	1
R288C	Carbon Film	33 kohm 1/5 W J	3069333970	1
R288L/R	Carbon Film	33 kohm 1/5 W J	3069333970	2
R289C	Carbon Film	560 ohm 1/5 W J	3069561970	1
R289L/R	Carbon Film	560 ohm 1/5 W J	3069561970	2
R290C	Carbon Film	4.7 kohm 1/5 W J	3069472970	1
R290L/R	Carbon Film	4.7 kohm 1/5 W J	3069472970	2
R291	Carbon Film	1.5 kohm 1/5 W J	3069152970	1
R292	Carbon Film	10 kohm 1/5 W J	3069103970	1
R294	Carbon Film	4.7 kohm 1/5 W J	3069472970	3
R298	Carbon Film	47 kohm 1/5 W J	3069473970	1
<b>MISCELLANEOUS</b>				
44	Heatsink, Regulator TR.	7505208220	1	
45	Heatsink, Regulator TR.	7505202410	1	
46	Jack, RCA, 2P	4435108510	1	
47	Jack, RCA, 6P	4435108710	2	
48	Jack, RCA, 3P	4435108810	4	
49	Jack, RCA, 2P, Yellow	4435114210	1	
50	Terminal Speaker, 8P	4408105810	1	
52	Terminal Speaker, 2P	4408108710	1	
	Plate, Ground	4235007310	2	
<b>PCB ASSEMBLY: P.C. BOARD TUNER</b>				
<b>CAPACITORS</b>				
C614L/R	Electrolytic SA	4.7 uF 50 V M	3479247971	2
C615L/R	Mylar	0.047 uF 100 V J	3679473120	2
C616-C617	Ceramic Tubular	3300 pF 50 V J	3519332935	2
C618	Ceramic Tubular	2200 pF 50 V J	3519222935	1
C625	Electrolytic SG	47 uF 25 V M	3479347041	1
C601	Ceramic Tubular	0.01 uF 50 V Z	3519103935	1
C602	Electrolytic SG	100 uF 16 V M	3479310131	1
C603	Electrolytic SA	0.047 uF 50 V M	3479247971	1
C604	Ceramic Tubular	0.01 uF 50 V Z	3519103935	1
C605	Ceramic Tubular	2200 uF 50 V Z	3519222935	1
C606	Poly	470 pF 50 V J	3519471110	1
C607	Ceramic Tubular	2200 uF 50 V Z	3519222935	1
C608	Ceramic Tubular	10 pF 50 V J	3519100935	1
C609	Ceramic Tubular	0.01 uF 50 V Z	3519103935	1
C610/C611	Ceramic Tubular	2200 uF 50 V Z	3519222935	2
C612	Electrolytic SA	4.7 uF 50 V M	3479247971	1
C613	Ceramic Tubular	2200 uF 50 V Z	3519222935	1
C614	Ceramic Tubular	47 pF 50 V J	3519470935	1
C615/C618	Ceramic Disc	0.047 uF 50 V Z	3579473530	2
C617	Electrolytic SA	2.2 uF 50 V M	3479222971	1
C618	Electrolytic SA	4.7 uF 50 V M	3479247971	1
C619	Ceramic Tubular	0.01 uF 50 V Z	3519103935	1
C620	Electrolytic SG	47 uF 25 V M	3479347041	1
C621	Electrolytic SA	2.2 uF 50 V M	3479222971	1
C622	Electrolytic SA	3.3 uF 50 V M	3479233971	1
C623	Electrolytic SA	10 uF 50 V M	3479210071	1
C624	Ceramic Tubular	0.047 uF 50 V Z	3519473935	1
C625	Ceramic Tubular	330 pF 50 V J	3519331935	1
C626	Mylar	0.027 uF 100 V J	3679273120	1
(C626)	Mylar	0.047 uF 100 V J	3679473120	1
C627	Ceramic Tubular	330 pF 50 V J	3519331935	1
C628D	Ceramic Tubular	82 pF 50 V J	3519820935	1
C629D	Ceramic Tubular	100 pF 50 V J	3519101935	1
C631	Electrolytic SA	4.7 uF 50 V M	3479247971	1
C632	Electrolytic SG	220 uF 16 V M	3479322131	1
C633	Ceramic Tubular	0.01 uF 50 V Z	3519103935	1
C634/C635	Electrolytic SA	0.47 uF 50 V M	3479247971	2
C636	Electrolytic SA	1 uF 50 V M	3479210971	1
C637	Mylar	0.047 uF 100 V J	3679473120	1
C638	Ceramic Tubular	880 pF 50 V J	3519681935	1
C639	Electrolytic SA	10 uF 50 V M	3479210071	1
C640L/R	Poly	150 pF 50 V J	3619151110	2
(C640L/R)	Poly	390 pF 50 V J	3619391110	2
C641L/R	Electrolytic SA	2.2 uF 50 V M	3479222971	2
C643	Ceramic Tubular	0.01 uF 50 V Z	3519103935	1







Ref. No.	Description	Mfr. Part No.	Q'ty	Version
<b>RESISTORS</b>				
R701	Metal Film	10 ohm 1 W J	3029100470	1
R702	Carbon Film	2 kohm 1/5 W J	3069202970	1
R703	Carbon Film	330 ohm 1/5 W J	3069331970	1
R704	Carbon Film	15 kohm 1/5 W J	3069153970	1
R706	Carbon Film	6.8 kohm 1/5 W J	3069682970	1
R707	Carbon Film	1 kohm 1/5 W J	3069102970	1
R708	Carbon Film	10 kohm 1/5 W J	3069103970	1
R709	Metal Film	3.3 ohm 1/2 W J	3009335373	1 USA/CANADA

<b>FUSES</b>				
F701	△ TL 4A, 250V	5508302934	1	EUROPE
(F701)	△ SB 4A, 125V	5508102921	1	USA/CANADA
F702	△ TL 4A, 250V	5508302934	1	EUROPE
(F702)	△ SB 4A, 125V	5508102921	1	USA/CANADA
F703	△ TL 4A, 250V	5508302934	1	EUROPE
(F703)	△ SB 6A, 125V	5508103121	1	USA/CANADA
F704	△ TL 500mA, 250V	5508301934	1	EUROPE
(F704)	△ NB 315mA, 125V	5508201421	1	USA/CANADA
F705	△ TL 2.5A, 250V	5508302535	1	EUROPE

<b>MISCELLANEOUS</b>				
RLY701	△ Relay, HR-CR313(TV-3)	5528042002	1	
G701	Plate, Ground	4235007310	1	
G702	Plate, Ground	4235007310	1	
63	Heatsink (H-30), Regulator TR.	7505206210	1	
64	Tie locking	6528002810	1	
65	△ Outlet, 1P	4448103610	1	EUROPE
(65)	△ Outlet, 3P	4448102910	1	USA/CANADA
	△ Standby Transformer, 230 V 50 Hz	2829000077	1	EUROPE
	△ Standby Transformer, 120 V 60 Hz	2829089007	1	USA/CANADA
	Pin, Solder	4228001410	2	
	Clip Fuse	4255001010	8	

**PCB4 ASSEMBLY P.C. BOARD SURROUND**

<b>CAPACITORS</b>				
C601/L/R	Ceramic Tubular	2200 pF 50 V J	3519222935	2
C602/L/R	Electrolytic SA	2.2 uF 50 V M	3479222971	2
C603/L/R	Ceramic Tubular	100 pF 50 V J	3519101935	2
C604/L/R	Electrolytic SA	2.2 uF 50 V M	3479222971	2
C605/L/R	Ceramic Tubular	4.7 pF 50 V J	3519047935	2
C606/L/R	Electrolytic SA	47 uF 35 V M	3479247061	2
C607	Mylar	0.1 uF 63 V K	3679104297	1
C608/C609	Electrolytic SA	10 uF 50 V M	3479210071	2
C610/C611	Electrolytic SA	10 uF 50 V M	3479210071	2
C612/C613	Ceramic Tubular	2200 uF 50 V Z	3519222935	2

<b>CONNECTORS</b>				
CN601	Lead Assy, 3P, 180 mm	436203183332	1	
CN602	Lead Assy, 7P, 350 mm	436207353332	1	

<b>DIODES</b>				
D601	1N4002, Rectifier	2258100135	1	
D602	1N4002, Rectifier	2258100135	1	
D606	1N4002, Rectifier	2258100135	1	

<b>INTEGRATED CIRCUITS</b>				
IC601	STK4132 II, Hybrid IC	2178317129	1	

<b>RESISTORS</b>				
R601/L/R	Carbon Film	1 kohm 1/5 W J	3069102970	2
R602/L/R	Carbon Film	47 kohm 1/5 W J	3069473970	2
R603/L/R	Carbon Film	2 kohm 1/5 W J	3069202970	2
R604/L/R	Carbon Film	43 kohm 1/5 W J	3069433970	2
R605/L/R	Metal Film	2.2 kohm 1 W J	3029222470	2
R606/L/R	Carbon Film	1.3 kohm 1/5 W J	3069132970	2
R607	Carbon Film	10 ohm 1/5 W J	3069100870	1
R608	Carbon Film	1.5 kohm 1/5 W J	3069152970	1
R609	Carbon Film	1 kohm 1/5 W J	3069102970	1
R610	Carbon Film	10 kohm 1/5 W J	3069103970	1
R611	Carbon Film	390 kohm 1/5 W J	3069394970	1
R612	Carbon Film	68 kohm 1/5 W J	3069683970	1
R613	Carbon Film	220 kohm 1/5 W J	3069224970	1
R614	Carbon Film	4.7 kohm 1/5 W J	3069472970	1
R620	Carbon Film	100 ohm 1/5 W J	3069101970	1

<b>MISCELLANEOUS</b>				
	Plate, Ground	4235007310	1	

**PCB5 ASSEMBLY P.C. BOARD TONE**

<b>CAPACITORS</b>				
C402/L/R	Ceramic Tubular	22 pF 50 V J	3519220835	2
C403/C404	Electrolytic SG	47 uF 25 V M	3479347041	2
C405/L/R	Electrolytic SA	10 uF 50 V M	3479210071	2
C406/L/R	Electrolytic SA	10 uF 50 V M	3479210071	2
C407/L/R	Ceramic Disc	39 pF 50 V J	3579390130	2
C409/L/R	Ceramic Tubular	39 pF 50 V J	3519390935	2
C410/L/R	Electrolytic SA	10 uF 50 V M	3479210071	2
C411/C412	Electrolytic SG	47 uF 25 V M	3479347041	2
C413/L/R	Electrolytic SA	10 uF 50 V M	3479210071	2
C414/L/R	Mylar	0.015 uF 100 V J	3679153120	2
C415/L/R	Mylar	0.082 uF 100 V J	3679823120	2
C417/L/R	Mylar	0.003 uF 100 V J	3679332120	2
C418/L/R	Mylar	0.018 uF 100 V J	3679183120	2
C431/L/R	Ceramic Tubular	100 pF 50 V J	3519101935	2 EUROPE
C432/L/R	Ceramic Tubular	100 pF 50 V J	3519101935	2 EUROPE

Ref. No.	Description	Mfr. Part No.	Q'ty	Version
C433	Ceramic Tubular	100 pF 50 V J	3519101935	1
<b>CONNECTORS</b>				
CN401	Lead Assy, 10P, 220 mm	436210223332	1	
CN402	Lead Assy, 5P, 400 mm	436205403332	1	

<b>DIODE</b>				
D401	1N4148M, Switching	2058322101	1	

<b>INTEGRATED CIRCUITS</b>				
IC401/IC402	KIA4559P/KIA75559P, OP Amp	2168206104	2	

<b>TRANSISTORS</b>				
Q401	BKTA126BY/KTA1015Y, PNP	2208206105	1	
Q402	DTC114YS	2208622106	1	

<b>RESISTORS</b>				
R401/L/R	Carbon Film	100 kohm 1/5 W J	3069104970	2
R402/L/R	Carbon Film	1 kohm 1/5 W J	3069102970	2
R403/L/R	Carbon Film	5.1 kohm 1/5 W J	3069512970	2
R404/L/R	Carbon Film	560 ohm 1/5 W J	3069561970	2
R405/L/R	Carbon Film	100 kohm 1/5 W J	3069104970	2
R406/L/R	Carbon Film	1 kohm 1/5 W J	3069102970	2
R407/L/R	Carbon Film	100 kohm 1/5 W J	3069104970	2
R408/L/R	Carbon Film	120 kohm 1/5 W J	3069124970	2
R409/L/R	Carbon Film	1 ohm 1/5 W J	3069105970	2
R410/R411	Carbon Film	220 ohm 1/5 W J	3069221970	2
R412/L/R	Carbon Film	560 ohm 1/5 W J	3069561970	2
R413/L/R	Carbon Film	100 kohm 1/5 W J	3069104970	2
R414/R415	Carbon Film	220 ohm 1/5 W J	3069221970	2
R416/L/R	Carbon Film	20 kohm 1/5 W J	3069203970	2
R418/L/R	Carbon Film	3.9 kohm 1/5 W J	3069392970	2
R419/L/R	Carbon Film	2.2 kohm 1/5 W J	3069222970	2
R420/L/R	Carbon Film	560 ohm 1/5 W J	3069561970	2
R421/L/R	Carbon Film	1.2 kohm 1/5 W J	3069122970	2
R422/L/R	Carbon Film	1.2 kohm 1/5 W J	3069122970	2
R423	Carbon Film	12 kohm 1/5 W J	3069123970	1
R424	Carbon Film	100 ohm 1/5 W J	3069101970	1
R425/R426	Carbon Film	3.6 kohm 1/5 W J	3069362970	2
R431/L/R	Carbon Film	470 ohm 1/5 W J	3069471970	2

<b>MISCELLANEOUS</b>				
RLY401	Relay, G5V-2-H1	5528040001	1	
19	Volume Rotary (Bass/Treble)	3208049510	2	
20	Volume Rotary (Balance)	3208052010	1	
21	Jack, RCA, 3P	4438109710	1	

**PCB6 ASSEMBLY P.C. BOARD VOLUME**

<b>CAPACITORS</b>				
C301/L/R	Ceramic Tubular	470 pF 50 V J	3519471935	2
C302/L/R	Mylar	0.082 uF 100 V J	3679823120	2
C303	Electrolytic SG	47 uF 25 V M	3479347041	1
C304/C305	Electrolytic SG	100 uF 10 V M	3479310121	2
C306	Ceramic Disc	0.047 uF 50 V Z	3579473530	1

<b>CONNECTOR</b>				
CP502	FPC Plug, 18P	4428526305	1	

<b>INTEGRATED CIRCUIT</b>				
IC301	TA7291S	2168007204	1	

<b>RESISTORS</b>				
R301/L/R	Carbon Film	51 kohm 1/5 W J	3069513970	2
R302/L/R	Carbon Film	6.2 kohm 1/5 W J	3069622970	2
R303/R304	Carbon Film	6.2 kohm 1/5 W J	3069622970	2
R305	Carbon Film	33 ohm 1/5 W J	3069330970	1
R306	Carbon Film	15 kohm 1/5 W J	3069153970	1
R307	Carbon Film	4.7 kohm 1/5 W J	3069472970	1

<b>MISCELLANEOUS</b>				
W301	Wire Lug, #24, Black, 140mm	152624101457	2	
22	Switch Push	4828059810	1	
23	Volume Motor	3228019410	1	

**PCB7 ASSEMBLY P.C. BOARD FRONT**

<b>CAPACITORS</b>				
C801	CAP, FMOH475ZTP16, Backup	5.5 V	3409347314	1
C802	Electrolytic SG	47 uF 25 V M	3479347041	1
C803	Ceramic Tubular	0.1 uF 50 V Z	3519104935	1
C804	Electrolytic SA	10 uF 50 V M	3479210071	1
C805	Ceramic Tubular	12 pF 50 V J	3519120935	1
C806	Electrolytic SA	33 uF 25 V M	3479233041	1
C807-C814	Ceramic Tubular	100 pF 50 V J	3519101935	8
C815/C816	Ceramic Tubular	0.047 uF 50 V Z	3519473935	2
C817-C821	Ceramic Tubular	100 pF 50 V J	3519101935	5
C822	Ceramic Tubular	0.1 uF 50 V Z	3519104935	1
C824	Ceramic Tubular	0.1 uF 50 V Z	3519104935	1

<b>CONNECTORS</b>				
CN801	Lead Assy, 8P 350 mm	436208353332	1	
CN802	FPC Plug 15P	4428526890	1	
CN803	FPC Plug 12P	4428526246	1	

Ref. No.	Description	Mfr. Part No.	Q'ty	Version	Ref. No.	Description	Mfr. Part No.	Q'ty	Version
<b>DIODES</b>					<b>CONNECTORS</b>				
D801-D816	1N4148M, Switching	2058322101	6		CN501	FPC Plug 19P	4428528310	1	
LED801	LED, SPS54M/VW3, Red/Green	2308222302	1		CN502	FPC Plug 18P	4428528305	1	
<b>INTEGRATED CIRCUIT</b>					CN503	Lead Ass'y, 9P, 450 mm	436209453332	1	
IC801	CPX82220-107Q, CPU	2138322182	1		CP401	Wafer 10P	4428516910	1	
<b>TRANSISTORS</b>					CP581	Wafer 2P	4428508210	1	
Q801	MPSA06Y, NPN	2208606114	1		CP601	Wafer 3P	4428516210	1	
Q802	KTC3198Y/KTC1815Y, NPN	2208606104	1		CP802	FPC Plug 15P	4428528270	1	
Q803	DTA114YS, PNP	2208222105	1		<b>DIODES</b>				
<b>RESISTORS</b>					D501	Zener, UZ 12.0BSC	2258599118	1	
R801	Carbon Film	10 kohm 1/5 W J	3069103970	1	D502-D504	1N4148M, Switching	2058322101	3	
R802	Carbon Film	180 ohm 1/5 W J	3069181970	1	<b>INTEGRATED CIRCUITS</b>				
R803	Carbon Film	150 ohm 1/5 W J	3069151970	1	IC501/IC502	KIA4559P/KIA755559P, OP Amp	2168208104	2	
R804	Carbon Film	22 kohm 1/5 W J	3069223970	1	IC503	LV-1000NA	2168017142	1	
R805	Carbon Film	47 kohm 1/5 W J	3069473970	1	IC504	DRAM, uPD61256-08	2138430001	1	
R806	Carbon Film	10 kohm 1/5 W J	3069103970	1	IC505	MC14094BCP	2138009115	1	
R807-R814	Carbon Film	1 kohm 1/5 W J	3069102970	8	IC506	LC7822	2168017139	1	
R815-R822	Carbon Film	47 kohm 1/5 W J	3069473970	8	IC507	TC8176P	2138007124	1	
R823	Carbon Film	1 kohm 1/5 W J	3069224970	1	IC508/IC509	KIA4559P/KIA755559P, OP Amp	2168208104	2	
R825	Carbon Film	3.3 kohm 1/5 W J	3069332970	1	<b>TRANSISTORS</b>				
R827-R831	Carbon Film	100 ohm 1/5 W J	3069101970	5	Q501	BKTA1268Y/KTA1015Y, PNP	2208208105	1	
R832	Carbon Film	1 kohm 1/5 W J	3069102970	1	Q502	DTC114YS	2208622108	1	
R834/R835	Carbon Film	47 kohm 1/5 W J	3069473970	2	Q503	DTA114YS, PNP	2208222105	1	
R836	Carbon Film	470 ohm 1/5 W J	3069471970	1	Q504/Q505	DTC114YS	2208622108	2	
R837	Carbon Film	1 kohm 1/5 W J	3069102970	1	Q506	KTC3198Y/KTC1815Y, NPN	2208606104	1	
R838	Carbon Film	330 ohm 1/5 W J	3069331970	1	Q507	DTA114YS, PNP	2208222105	1	
R839	Carbon Film	47 kohm 1/5 W J	3069473970	1	Q508/LR	KTD1302, NPN	2208608112	2	
R844/R845	Carbon Film	3.3 ohm 1/5 W J	3069339970	2	Q509	KTC3198Y/KTC1815Y, NPN	2208608104	1	
<b>MISCELLANEOUS</b>					Q510	DTA114YS, PNP	2208222105	1	
X-TAL801	Resonator, CST10.00MTW	3938131750	1		Q511	KTD1302, NPN	2208608112	1	
24	Switch Push	4628054410	1		Q512	KTC3198Y/KTC1815Y, NPN	2208608104	1	
28	Switch Tact	4658003710	38		Q513	DTA114YS, PNP	2208222105	1	
29(SEN801)	Remote Sensor, TFM75380 (38 kHz)	2408005001	1		Q514/LR	KTD1302, NPN	2208608112	2	
30(FIP801)	FIP, 12 LM 8, FL Display	2328130301	1		Q515	KTC3198Y/KTC1815Y, NPN	2208608104	1	
<b>PCB ASSEMBLY BOARD DOLBY</b>					<b>RESISTORS</b>				
<b>CAPACITORS</b>					R501/R502	Carbon Film	100 ohm 1/5 W J	3069101970	2
C501/C502	Electrolytic SG	47 uF 25 V M	3479347041	2	R503	Carbon Film	10 kohm 1/5 W J	3069103970	1
C503/LR	Electrolytic SA	4.7 uF 50 V M	3479247971	2	R504L	Carbon Film	10 kohm 1/5 W J	3069103970	1
C504	Electrolytic SA	3.3 uF 50 V M	3479233971	1	R504R	Carbon Film	22 kohm 1/5 W J	3069223970	1
C505	Electrolytic SA	10 uF 50 V M	3479210071	1	R505/LR	Carbon Film	22 kohm 1/5 W J	3069223970	2
C507	Electrolytic SA	3.3 uF 50 V M	3479233971	1	R506	Carbon Film	22 kohm 1/5 W J	3069223970	1
C508/C509	Electrolytic SG	47 uF 25 V M	3479347041	2	R507	Carbon Film	1.5 kohm 1/5 W J	3069152970	1
C510	Electrolytic SA	2.2 uF 50 V M	3479222971	1	R508	Carbon Film	750 ohm 1/5 W J	3069751970	1
C511	Electrolytic SA	3.3 uF 50 V M	3479233971	1	R509	Carbon Film	1.8 kohm 1/5 W J	3069182970	1
C512	Mylar	0.15 uF 63 V K	3679154297	1	R510	Carbon Film	3.9 kohm 1/5 W J	3069392970	1
C513	Ceramic Tubular	150 pF 50 V J	3519151935	1	R511	Carbon Film	4.7 kohm 1/5 W J	3069472970	1
C514	Electrolytic SG	220 uF 10 V M	3479322121	1	R515	Carbon Film	3.3 kohm 1/5 W J	3069332970	1
C515	Poly	120 pF 50 V J	3619121110	1	R516/R517	Carbon Film	100 ohm 1/5 W J	3069101970	2
C516	Poly	680 pF 50 V J	3619681110	1	R519	Carbon Film	10 kohm 1/5 W J	3069103970	1
C517	Electrolytic SA	4.7 uF 50 V M	3479247971	1	R520	Carbon Film	100 kohm 1/5 W J	3069104970	1
C518	Electrolytic SG	47 uF 50 V M	3479347071	1	R521	Carbon Film	3.9 kohm 1/5 W J	3069392970	1
C519	Electrolytic SG	470 uF 10 V M	3479347121	1	R522/LR	Carbon Film	8.8 kohm 1/5 W J	3069682970	2
C520	Poly	880 pF 50 V J	3619681110	1	R523/LR	Carbon Film	100 kohm 1/5 W J	3069104970	2
C521	Mylar	0.022 uF 100 V J	3679223120	1	R524	Metal Film	56 ohm 1 W J	3029580470	1
C522	Poly	150 pF 50 V J	3619151110	1	R525	Carbon Film	56 ohm 1/5 W J	3069580970	1
C523-C525	Electrolytic SG	220 uF 16 V M	3479322131	3	R526	Carbon Film	1 ohm 1/5 W J	3069105970	1
C526/C527	Ceramic Tubular	0.1 uF 50 V Z	3519104935	1	R527	Carbon Film	47 kohm 1/5 W J	3069473970	1
C528	Electrolytic SG	220 uF 16 V M	3479322131	1	R528	Carbon Film	3.3 kohm 1/5 W J	3069332970	1
C529	Mylar	0.22 uF 63 V K	3679224297	1	R529	Carbon Film	15 kohm 1/5 W J	3069153970	1
C530	Mylar	0.068 uF 100 V J	3679683120	1	R530	Carbon Film	8.2 kohm 1/5 W J	3069822970	1
C531	Mylar	0.0039 uF 100 V J	3679392120	1	R531	Carbon Film	100 kohm 1/5 W J	3069104970	1
C532	Mylar	0.0047 uF 100 V J	3679472120	1	R532	Carbon Film	39 kohm 1/5 W J	3069393970	1
C533	Mylar	0.033 uF 100 V J	3679333120	1	R533/R534	Carbon Film	8.2 kohm 1/5 W J	3069822970	2
C534	Electrolytic SA	10 uF 50 V M	3479210071	1	R535	Carbon Film	47 kohm 1/5 W J	3069473970	1
C535	Electrolytic SA	1 uF 50 V M	3479210971	1	R536	Carbon Film	5.6 kohm 1/5 W J	3069582970	1
C536/C537	Electrolytic SA	10 uF 50 V M	3479210071	2	R537	Carbon Film	1 kohm 1/5 W J	3069102970	1
C538	Ceramic Tubular	470 pF 50 V J	3519471935	1	R538	Carbon Film	10 kohm 1/5 W J	3069103970	1
C539/LR	Electrolytic SA	10 uF 50 V M	3479210071	2	R539-R541	Carbon Film	1 kohm 1/5 W J	3069102970	3
C540	Ceramic Tubular	680 pF 50 V J	3519881935	1	R542	Carbon Film	220 ohm 1/5 W J	3069221970	1
C541	Mylar	0.0056 uF 100 V J	3679562120	1	R543	Carbon Film	100 kohm 1/5 W J	3069104970	1
C542	Mylar	0.0047 uF 100 V J	3679472120	1	R544	Carbon Film	220 ohm 1/5 W J	3069221970	1
C543	Electrolytic SA	10 uF 50 V M	3479210071	1	R545-R547	Carbon Film	1 kohm 1/5 W J	3069102970	3
C544	Ceramic Tubular	0.1 uF 50 V Z	3519104935	1	R548/R549	Carbon Film	220 ohm 1/5 W J	3069221970	2
C545-C547	Ceramic Tubular	100 pF 50 V J	3519101935	3	R550-R552	Carbon Film	1 kohm 1/5 W J	3069102970	3
C548	Ceramic Tubular	0.01 uF 50 V Z	3519103935	1	R553/LR	Carbon Film	680 ohm 1/5 W J	3069681970	2
C549	Electrolytic SA	1 uF 50 V M	3479210971	1	R554/LR	Carbon Film	1 ohm 1/5 W J	3069105970	2
C550/C551	Electrolytic SG	47 uF 25 V M	3479347041	2	R555/LR	Carbon Film	4.7 kohm 1/5 W J	3069472970	2
C553/C554	Ceramic Tubular	100 pF 50 V J	3519101935	2	R556/LR	Carbon Film	1.5 kohm 1/5 W J	3069152970	2
C555/C556	Electrolytic SG	47 uF 25 V M	3479347041	2	R557/LR	Carbon Film	2 kohm 1/5 W J	3069202970	2
C557/LR	Electrolytic SA	1 uF 50 V M	3479210971	2	R558/R559	Carbon Film	100 ohm 1/5 W J	3069101970	2
C558/LR	Ceramic Tubular	0.0001 uF 50 V Z	3519102935	2	R560/LR	Carbon Film	680 ohm 1/5 W J	3069681970	2
C559/LR	Electrolytic SA	22 uF 50 V M	3479222041	2	R561/LR	Carbon Film	1 ohm 1/5 W J	3069105970	2
C561/C562	Electrolytic SG	47 uF 25 V M	3479347041	2	R562/LR	Carbon Film	4.7 kohm 1/5 W J	3069472970	2
C563/LR	Electrolytic SA	1 uF 50 V M	3479210971	2	R563/LR	Carbon Film	1.5 kohm 1/5 W J	3069152970	2
C564/LR	Ceramic Tubular	0.001 uF 50 V Z	3519102935	2	R564/LR	Carbon Film	2 kohm 1/5 W J	3069202970	2
C565/LR	Electrolytic SA	3.3 uF 50 V M	3479233971	2	R565/R566	Carbon Film	100 ohm 1/5 W J	3069101970	2
C566/C567	Electrolytic SG	47 uF 25 V M	3479347041	2	R567	Carbon Film	2.2 kohm 1/5 W J	3069222970	1
C568-C570	Ceramic Tubular	100 pF 50 V J	3519101935	3	R568/LR	Carbon Film	2.2 kohm 1/5 W J	3069222970	2
C571	Electrolytic SA	10 uF 50 V M	3479210071	1	R569-R571	Carbon Film	2.2 kohm 1/5 W J	3069222970	3
C572	Electrolytic SG	220 uF 16 V M	3479322131	1	R572/LR	Carbon Film	2.2 kohm 1/5 W J	3069222970	2
C573	Electrolytic SA	10 uF 50 V M	3479210071	1	R573	Carbon Film	820 ohm 1/5 W J	3069821970	1
					R574	Carbon Film	1 kohm 1/5 W J	3069102970	1
					R575/LR	Carbon Film	1 kohm 1/5 W J	3069102970	2
					R576/R577	Carbon Film	220 kohm 1/5 W J	3069224970	2

Ref. No.	Description	Mfr. Part No.	Q'ty	Version
<b>MISCELLANEOUS</b>				
X-TAL501	Resonator, CST8.00MTW	3938131590	1	
VR501	Semi Fixed Resistor, 10 k (B)	3248010343	1	
W501	CTB 0135 LV DIAMOND DL B#16	4359855035	1	

<b>PCB9: ASSEMBLY P.C. BOARD HEADPHONE</b>				
R295L/R	RES, Metal Film	470 ohm 2 W J	3029471570	2
C291L/R	CAP, Ceramic	580 pF 50 V J	3519561935	2
CN291	Connector, Lead Ass'y, 12P, 350 mm		435112353401	1
25(SW291)	Switch Push		4628043810	1
26(SW292)	Switch Push		4628049210	1
27	Jack, Phone		4438005010	1

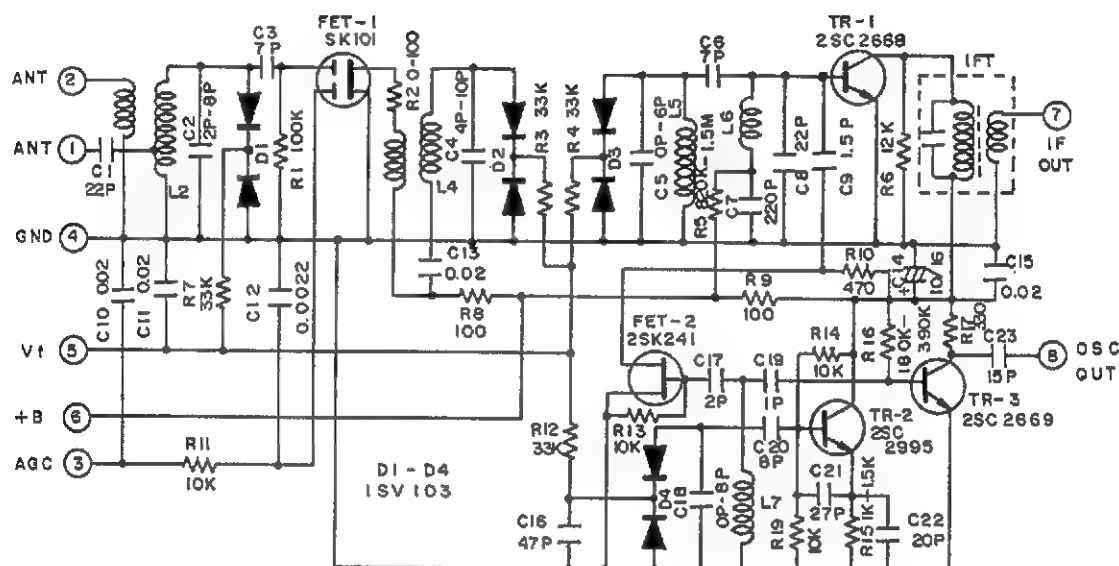
Ref. No.	Description	Mfr. Part No.	Q'ty	Version
<b>PCB10: ASSEMBLY P.C. BOARD VOLUME LED</b>				
CNT581	Lead Ass'y, 2P, 180 mm, 2.5 mm Pitch		4358102184	1
LED581	LED, SLC-22VRS, Green		2308220324	1

<b>PCB11: ASSEMBLY P.C. BOARD SUB WOOFER</b>				
CN903	Lead Ass'y, 3P, 180mm		438203183332	1
R964L/R	Carbon Film	1 kohm 1/5 W J	3069102870	2
66	Jack RCA, 2P		4438111510	1

## IC FUNCTIONAL BLOCK DIAGRAM

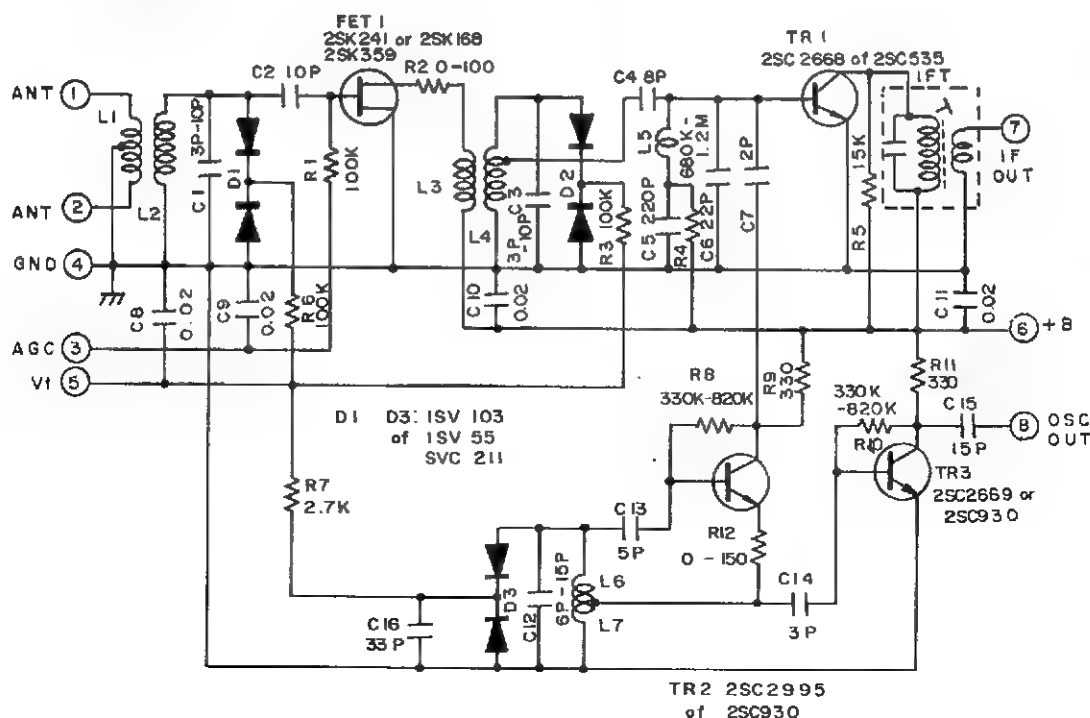
FE901

FE407-G60 (EUROPE VERSION)

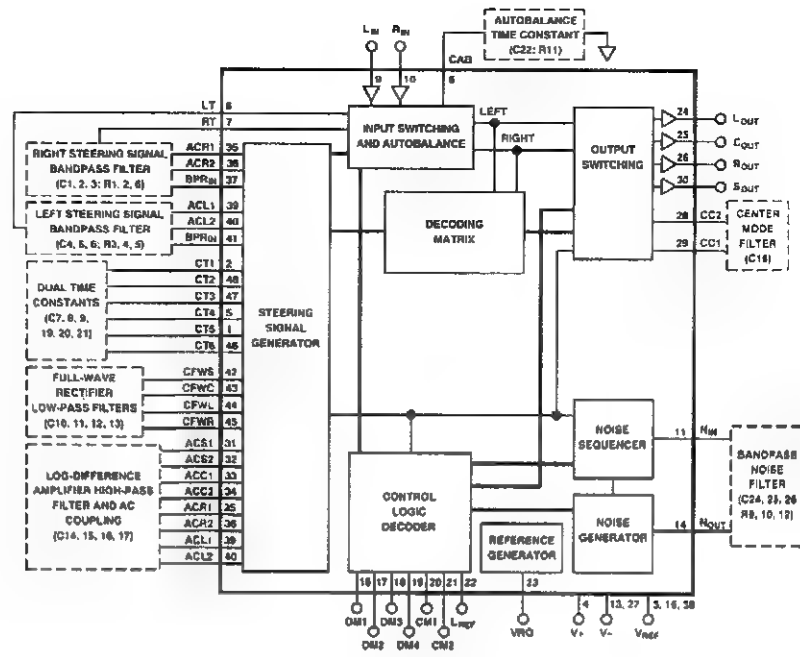


FE901

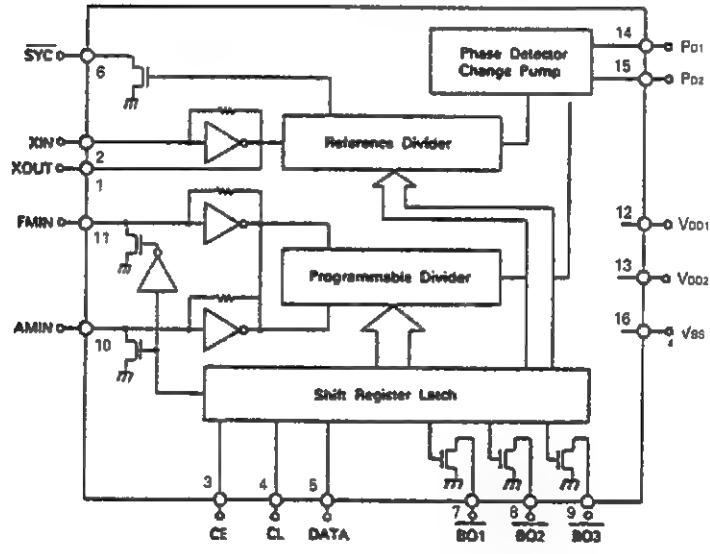
FE407-A15 (USA/CANADA VERSION)



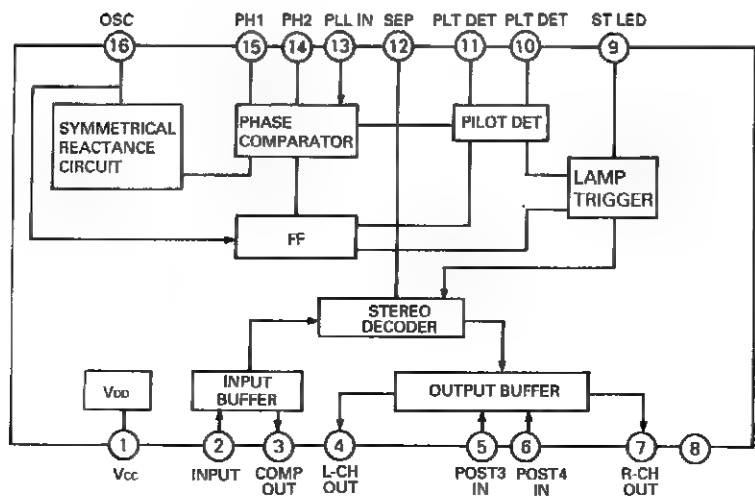
IC201 SSM2126A



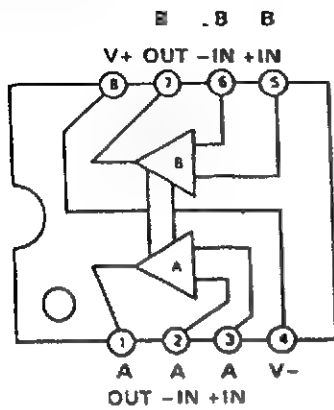
IC901 LM7001



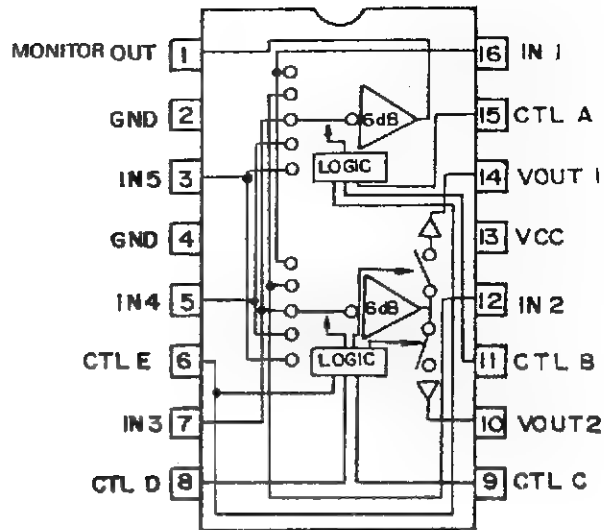
IC903 KA2265



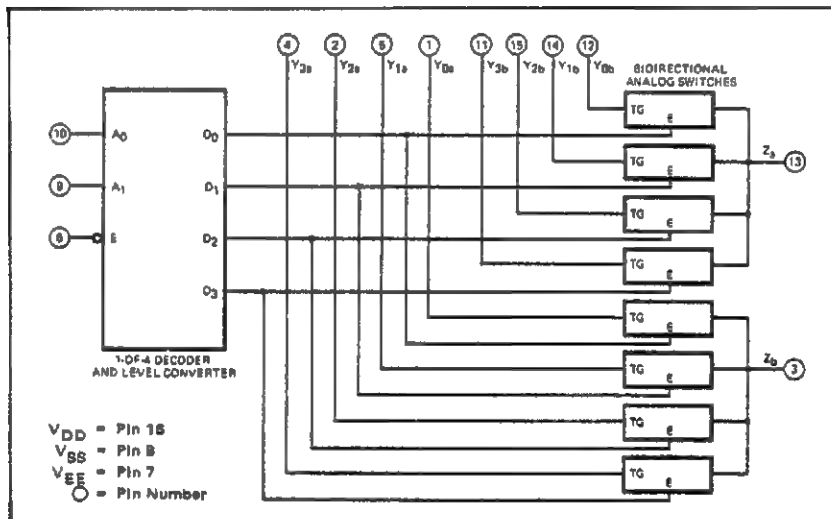
IC106, IC107, IC108, IC401, IC402  
 IC501, IC502, IC508, IC509  
 KIA4559P/KIA75559P



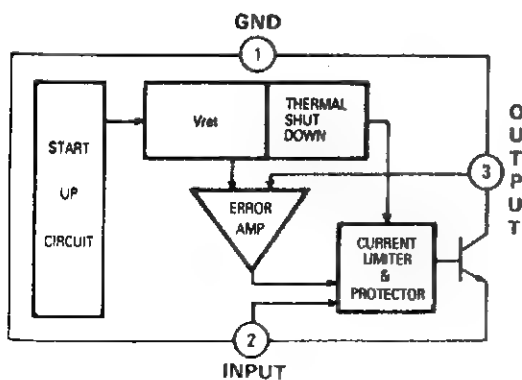
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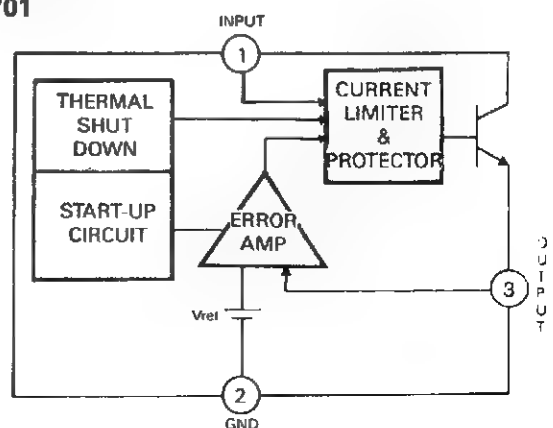
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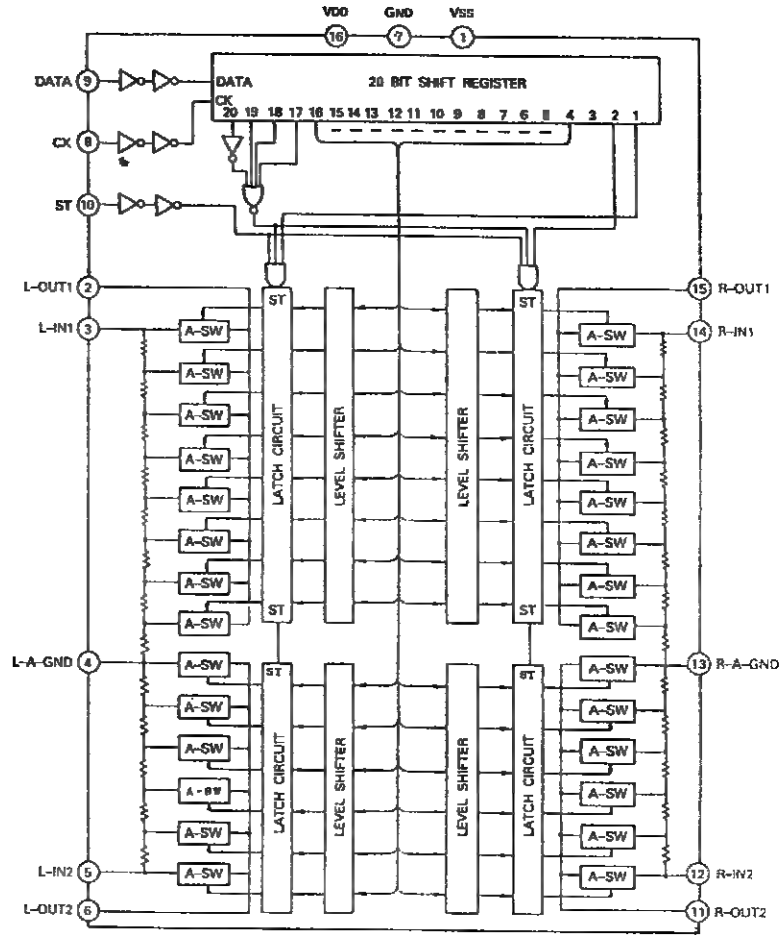
IC243 GL7915



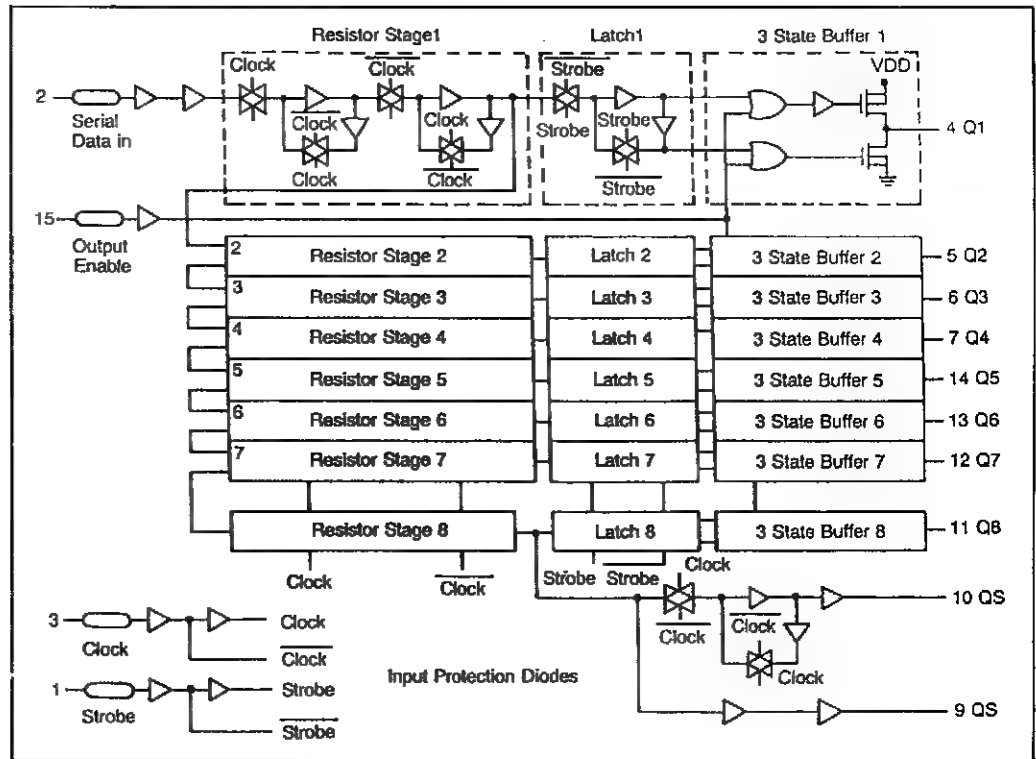
IC241 GL7815  
 IC242 GL7006  
 IC701

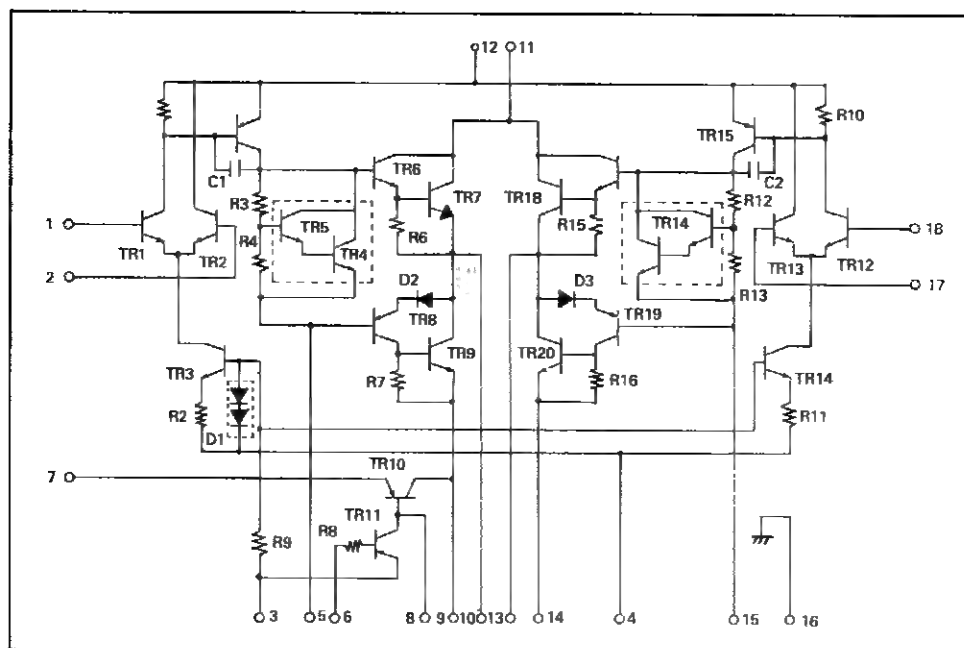


# IC507 TC9176P

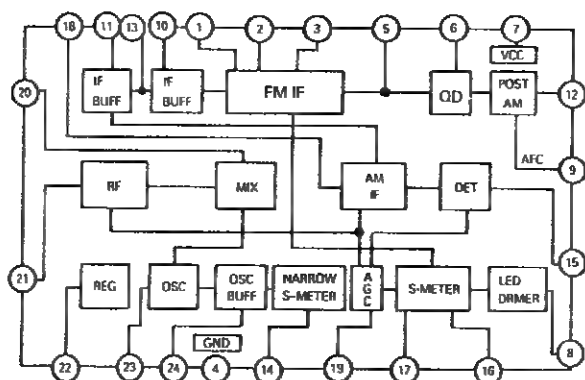
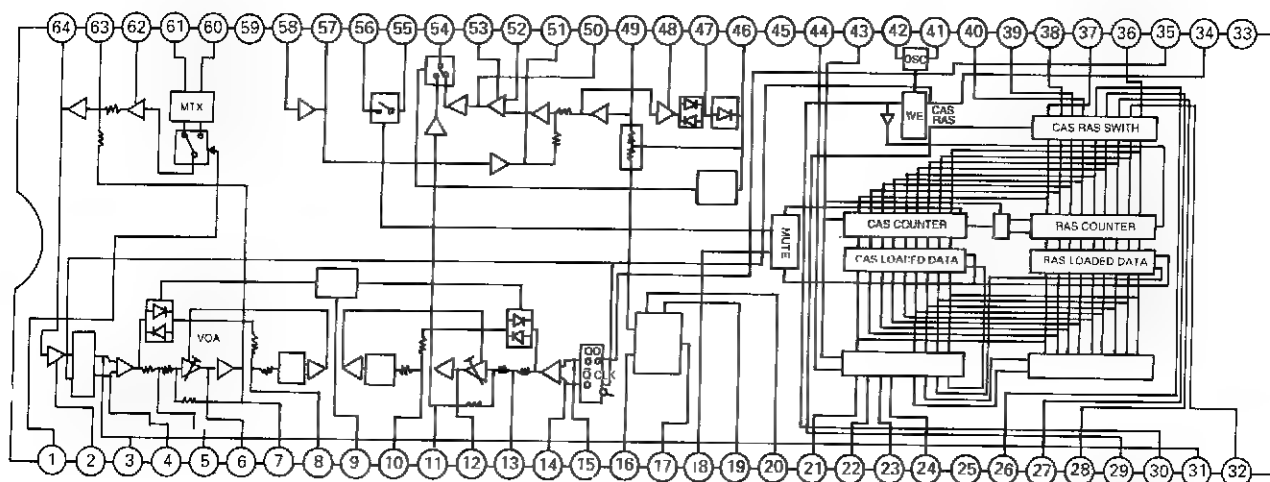


# IC105, IC202, IC505 MC14094BCP

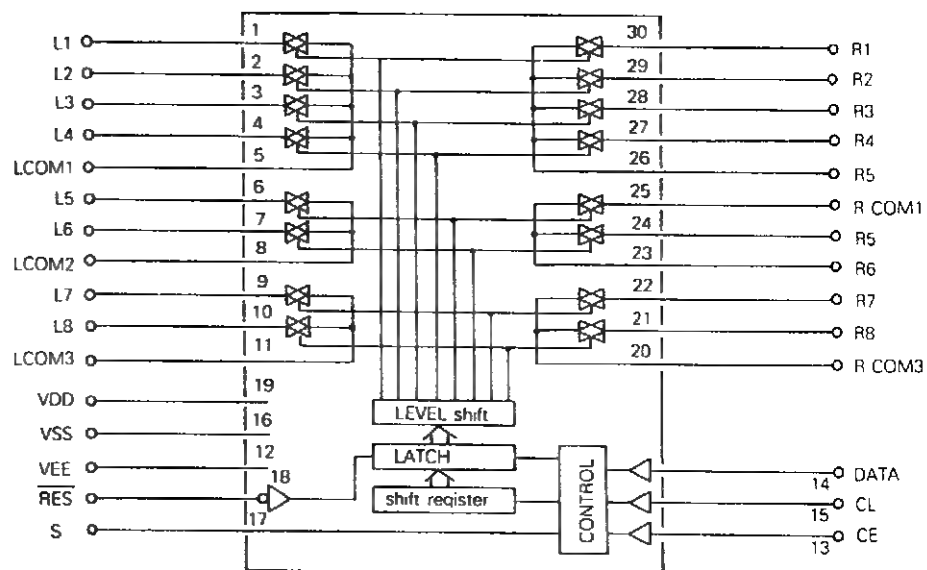


**IC601 STK4132II**

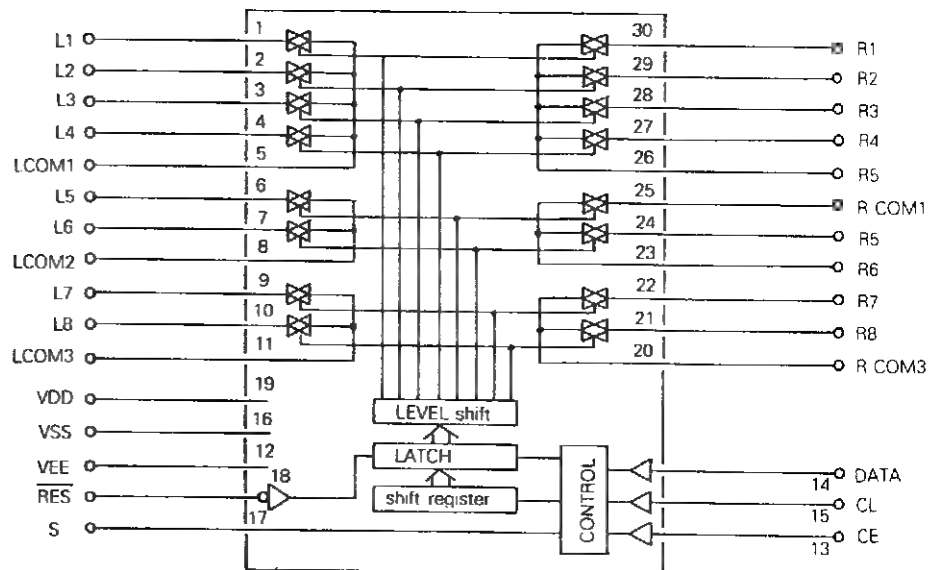
## IC902 LA1266

**IC503 LV1000NA**

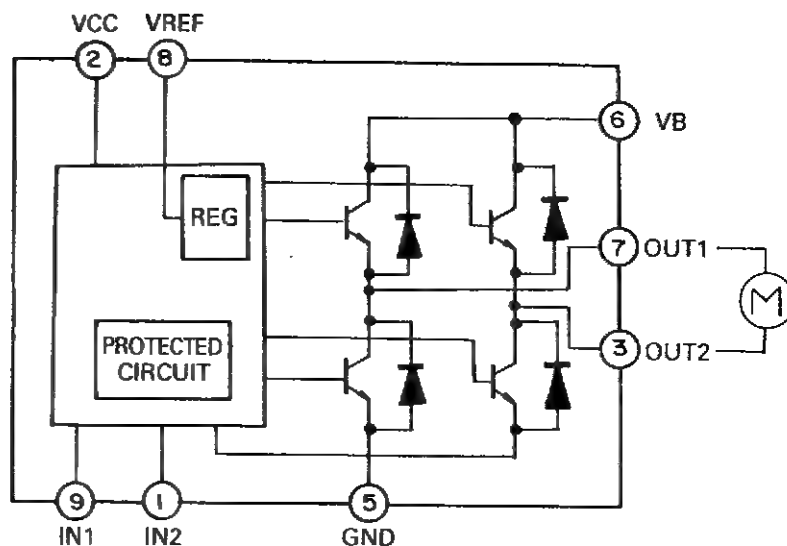
# IC101, IC102 LC7821



# IC109, IC506 LC7822

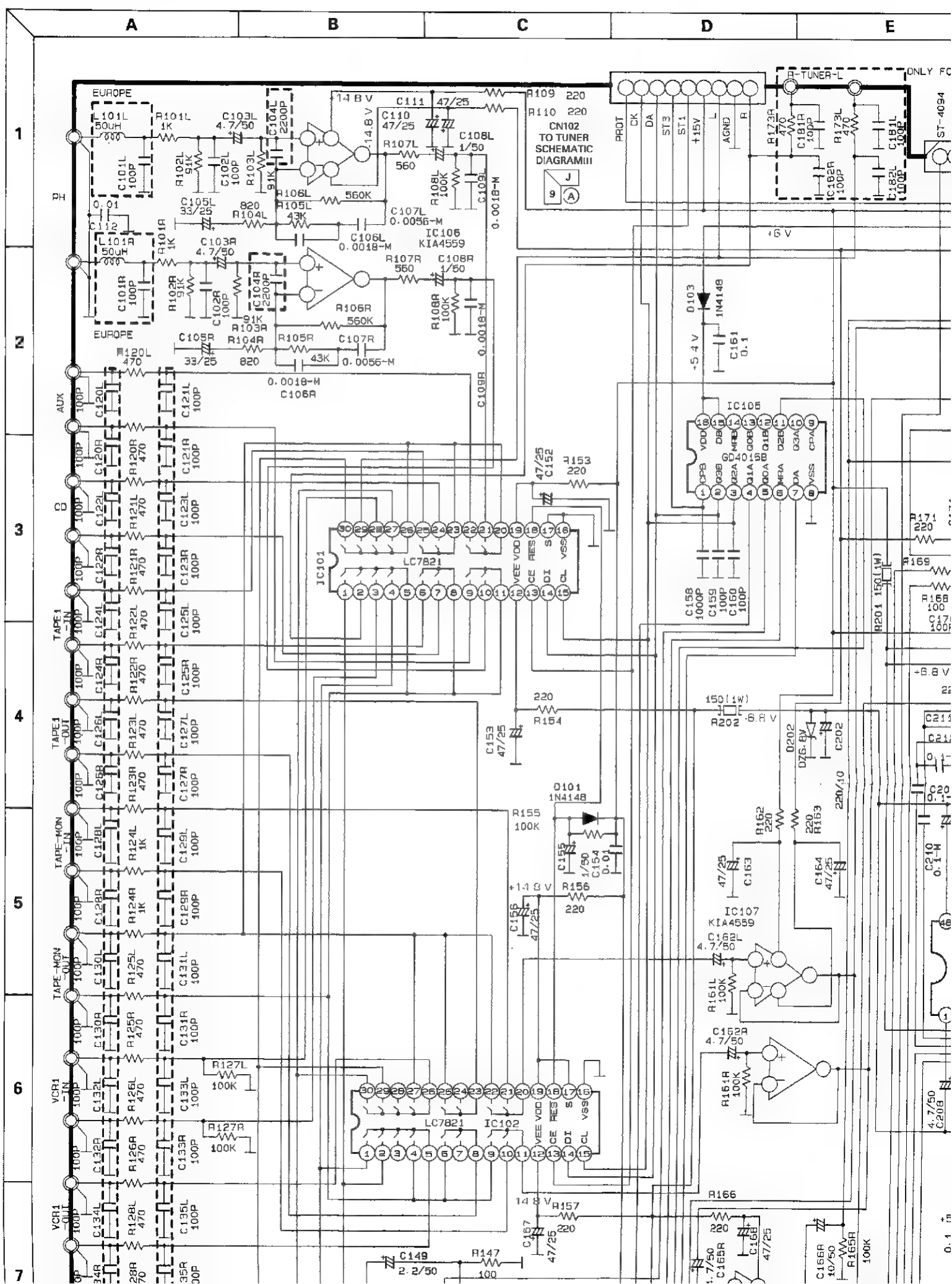


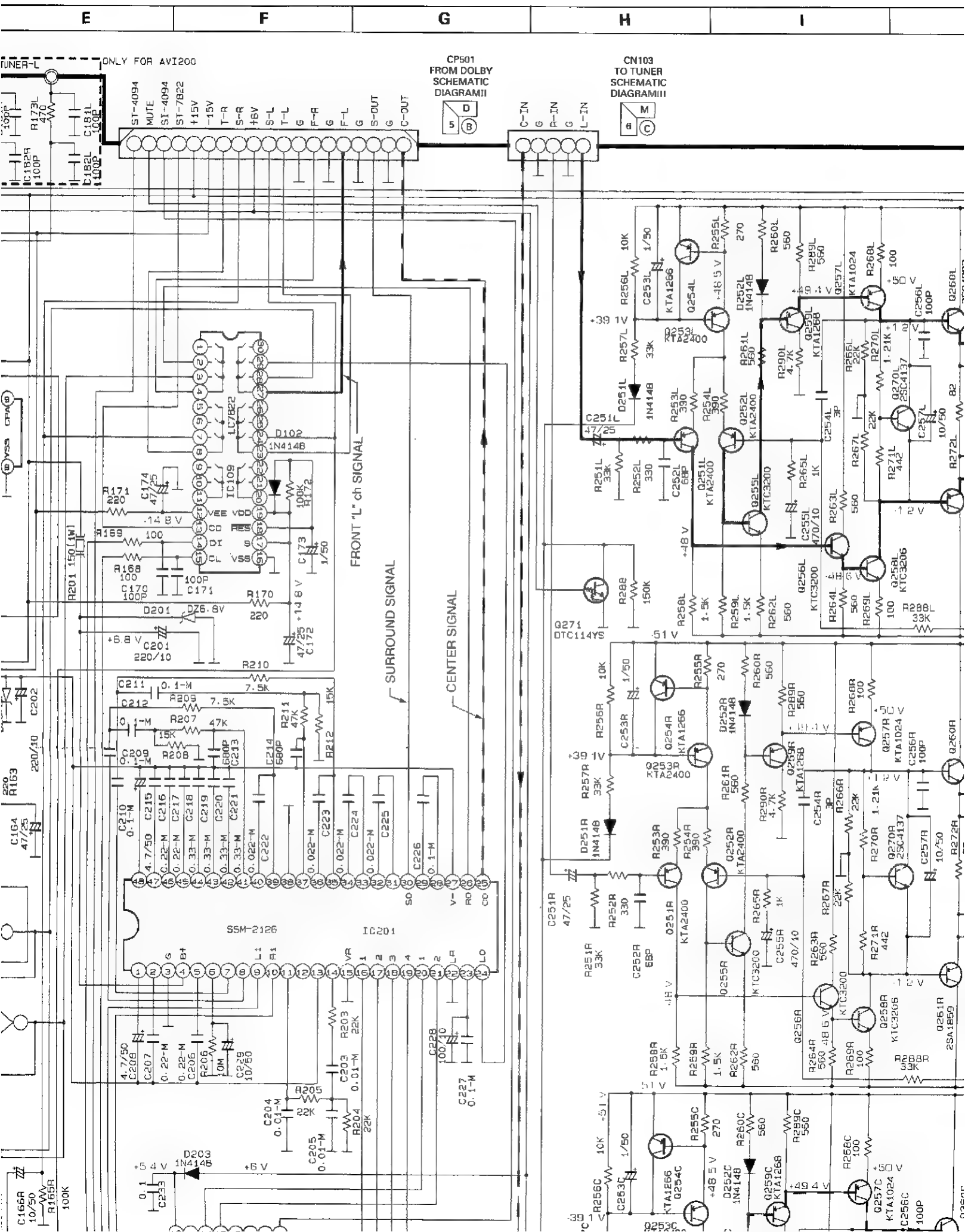
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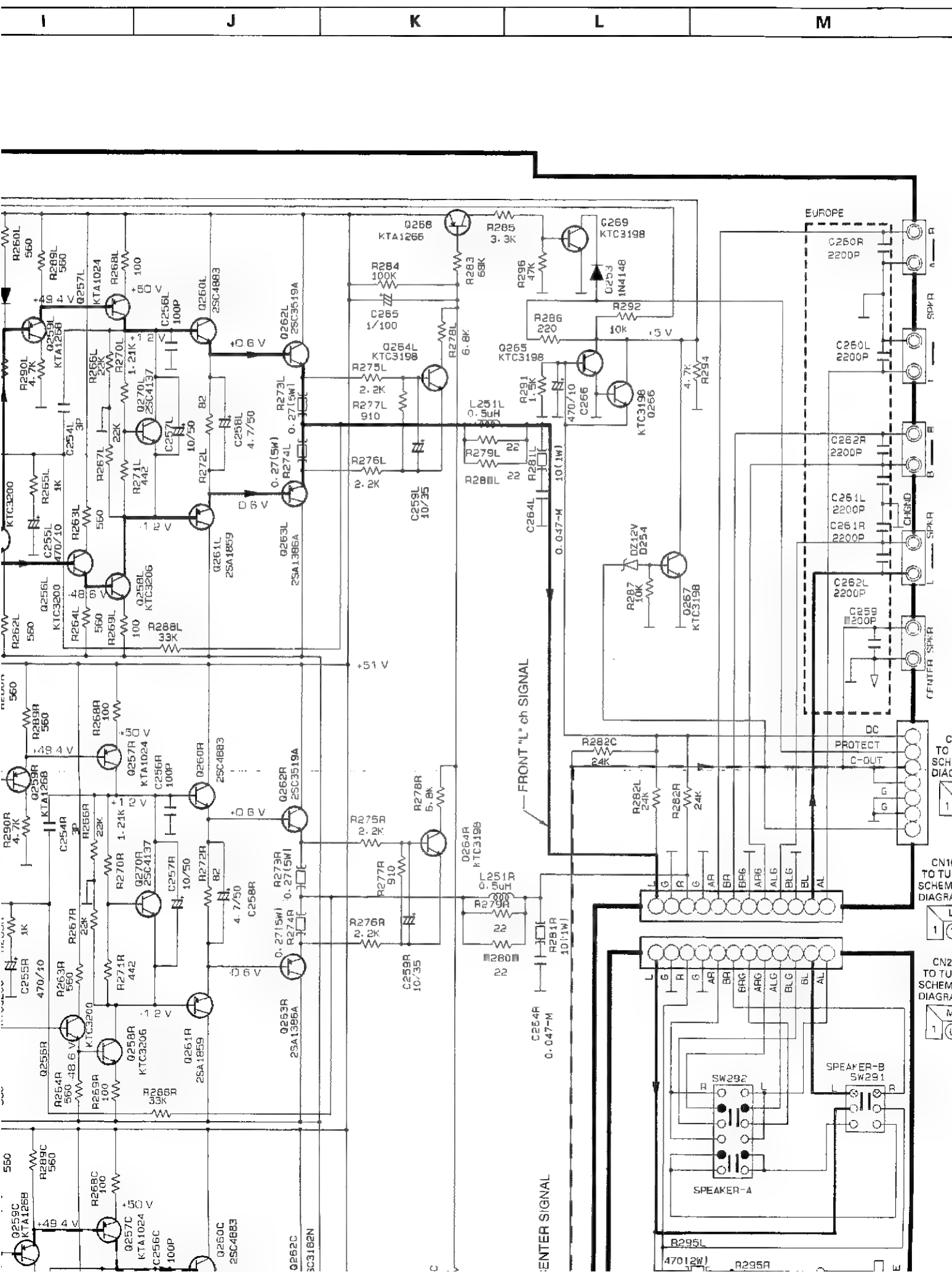


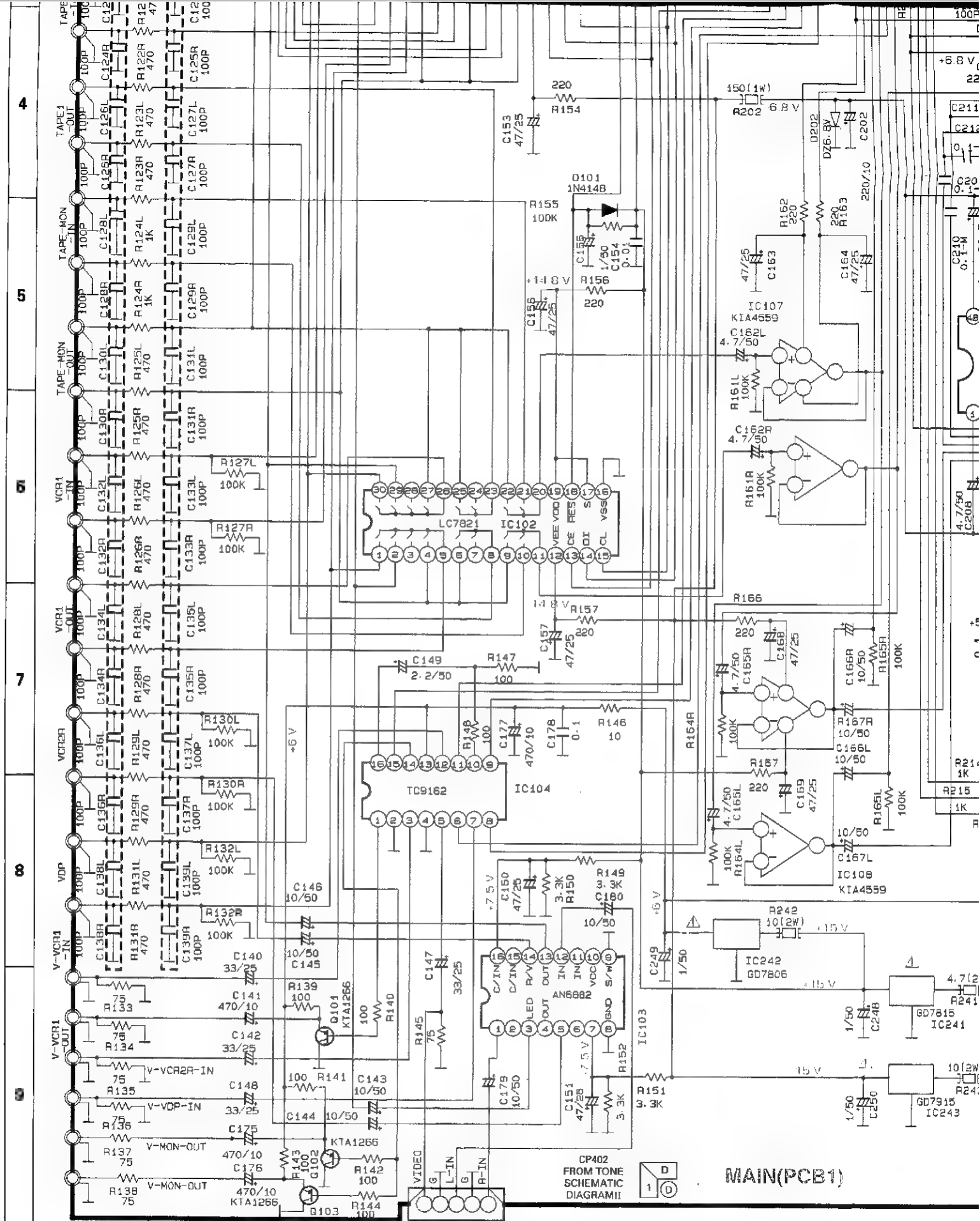


## SCHEMATIC DIAGRAMS I





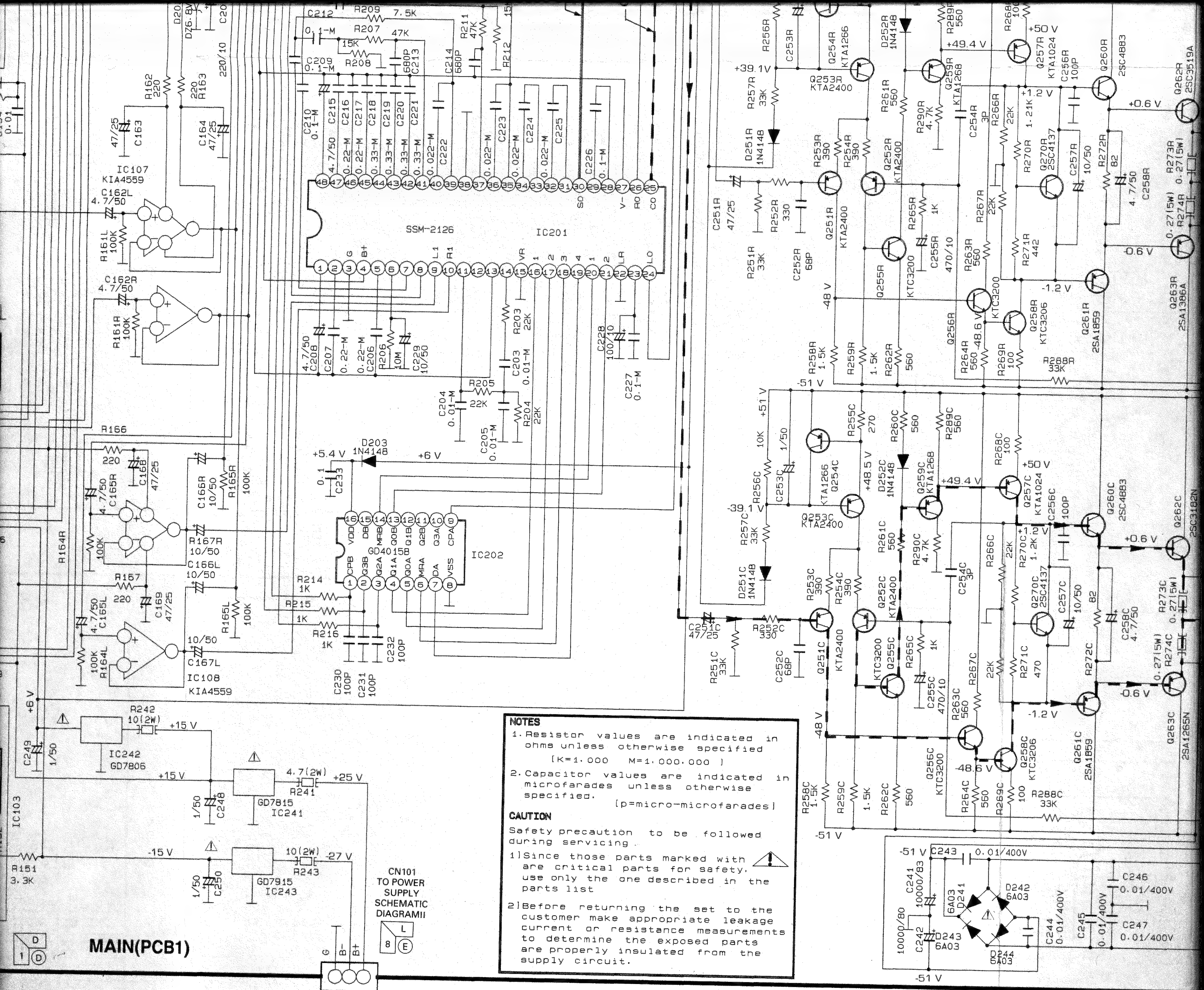




PIN CONNECTION DIAGRAM OF TRANSISTORS AND DIODES

<p>2SA1265N 2SC3182N 2SC3519A 2SA1859A</p>	<p>2SC4137</p>	<p>DTA114YS DTC114YS</p>	<p>SPR-54MDW3 SLR-22VRS</p>	<p>ZENER PX6A03 IN5402 IN4003 IN4148</p>
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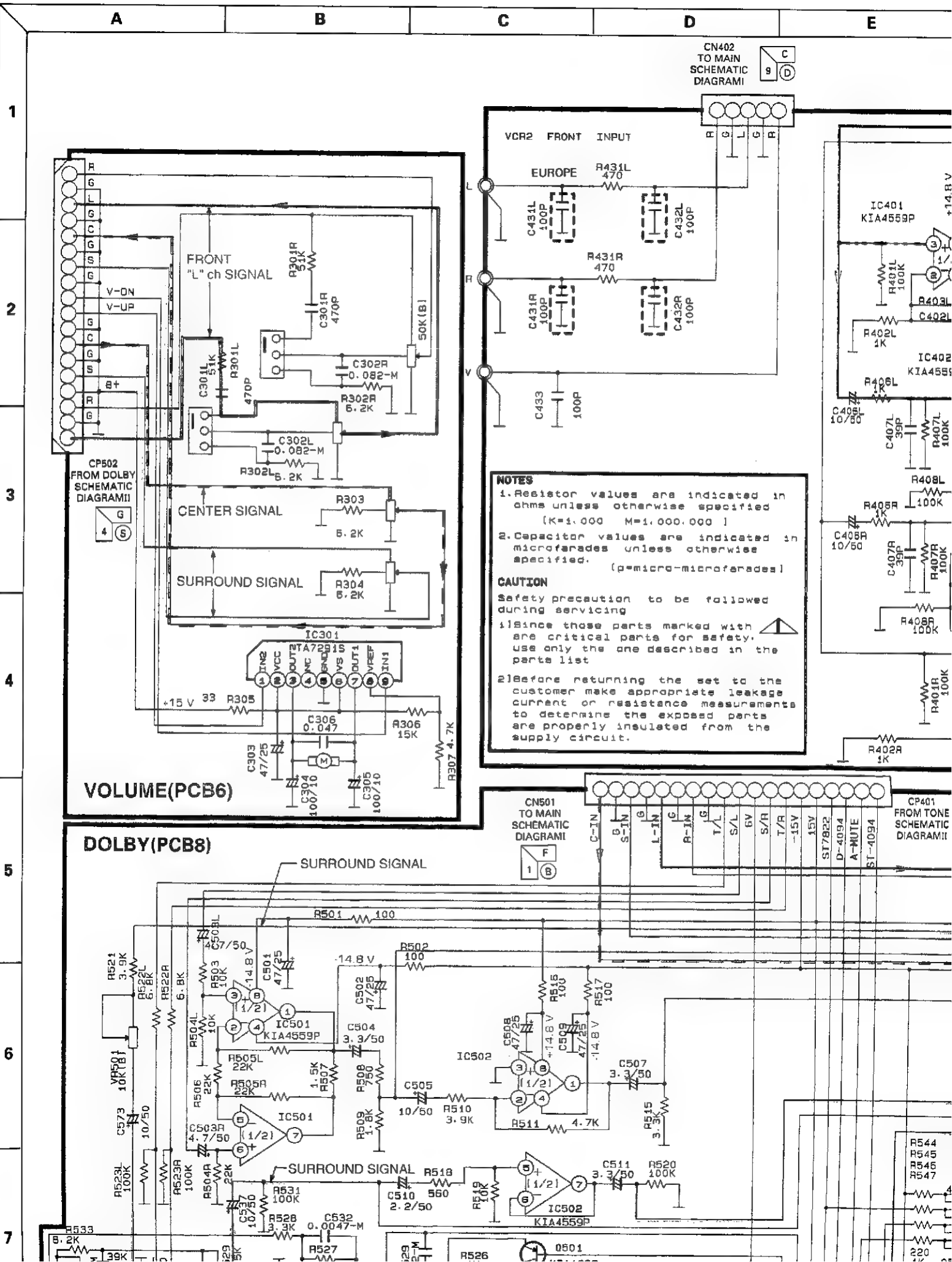


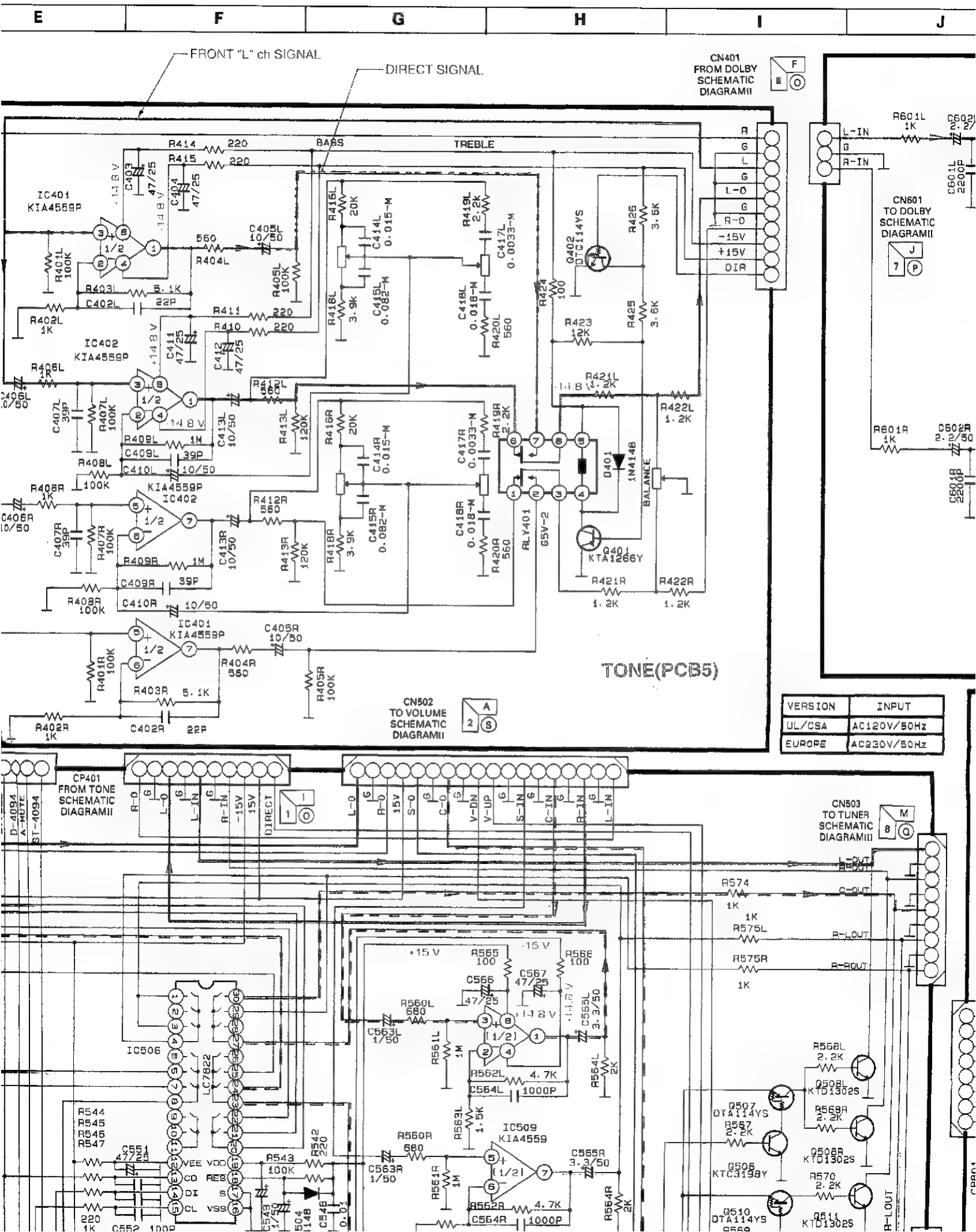






# SCHEMATIC DIAGRAMS II









CN503  
TO TUNER  
SCHEMATIC  
DIAGRAM III

M  
B

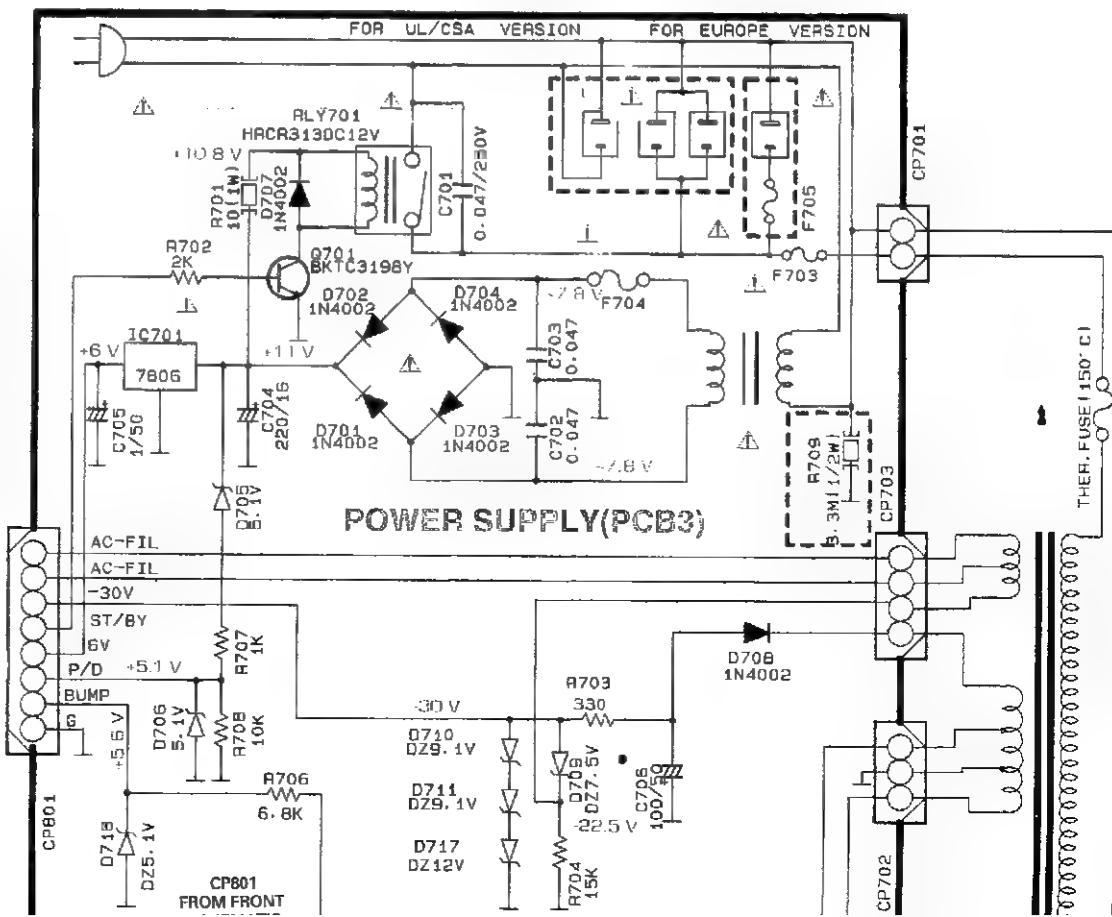
L-OUT  
B-OUT  
C-OUT  
A-OUT  
R-OUT

A574  
1K  
1K  
A575L  
A575R  
1K  
A576

R556L  
2.2K  
Q508L  
KT01302S  
R568A  
2.2K  
Q508R  
KT01302S  
R570  
2.2K  
Q511  
KT01302S

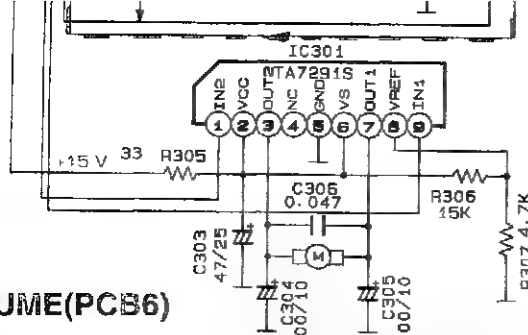
Q507  
ITA114YS  
R567  
2.2K  
Q506  
TC3198Y  
Q510  
ITA114YS  
R569


R-OUT

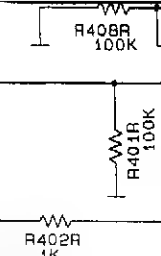


4

## VOLUME(PCB6)



- 1) Since those parts marked with  are critical parts for safety, use only the one described in the parts list
- 2) Before returning the set to the customer make appropriate leakage current or resistance measurements to determine the exposed parts are properly insulated from the supply circuit.



## DOLBY(PCB8)

SURROUND SIGNAL

CN501  
TO MAIN  
SCHEMATIC  
DIAGRAM ICP401  
FROM TONE  
SCHEMATIC  
DIAGRAM I

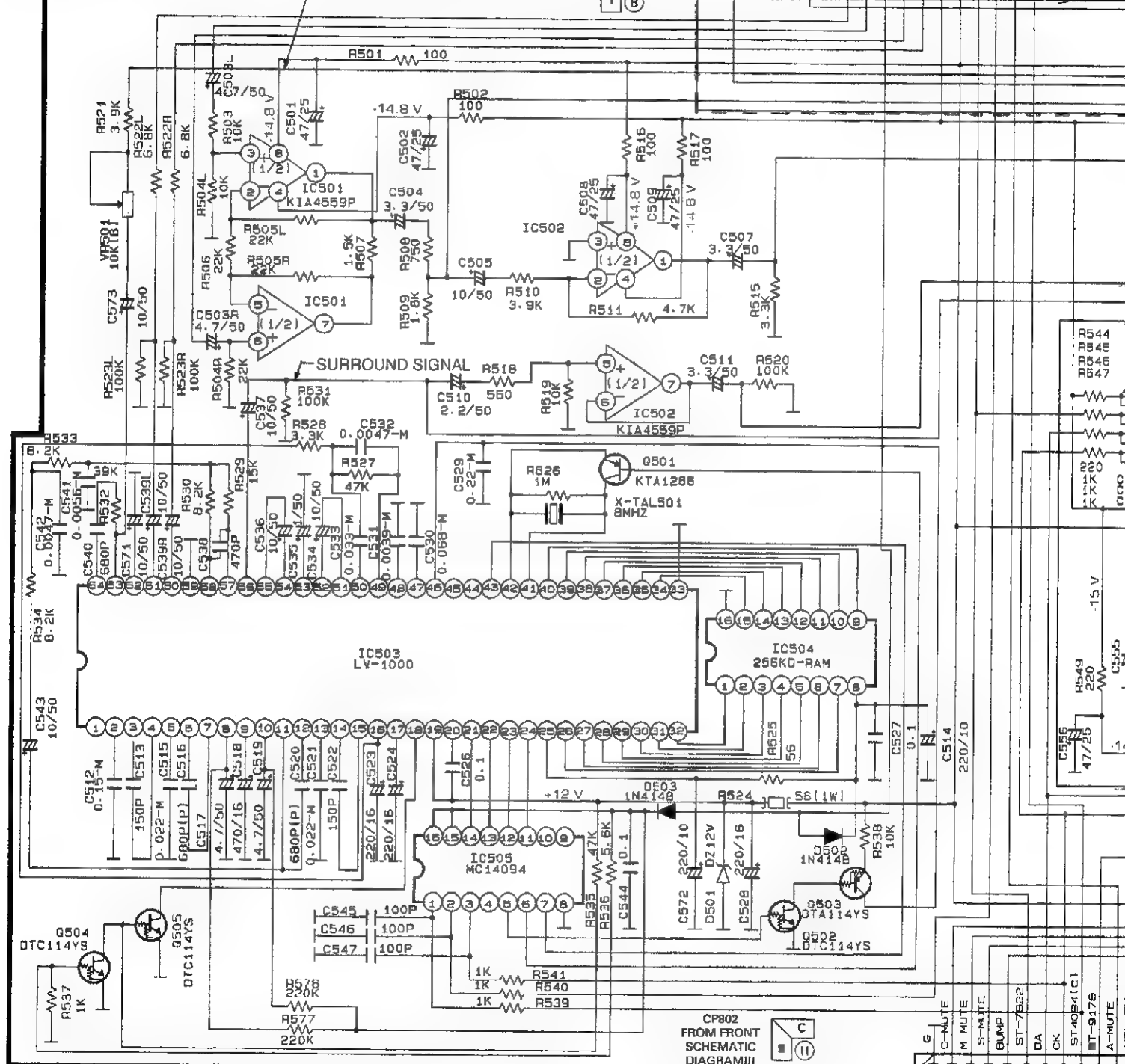
5

6

7

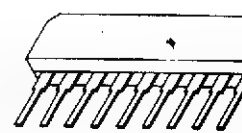
8

9

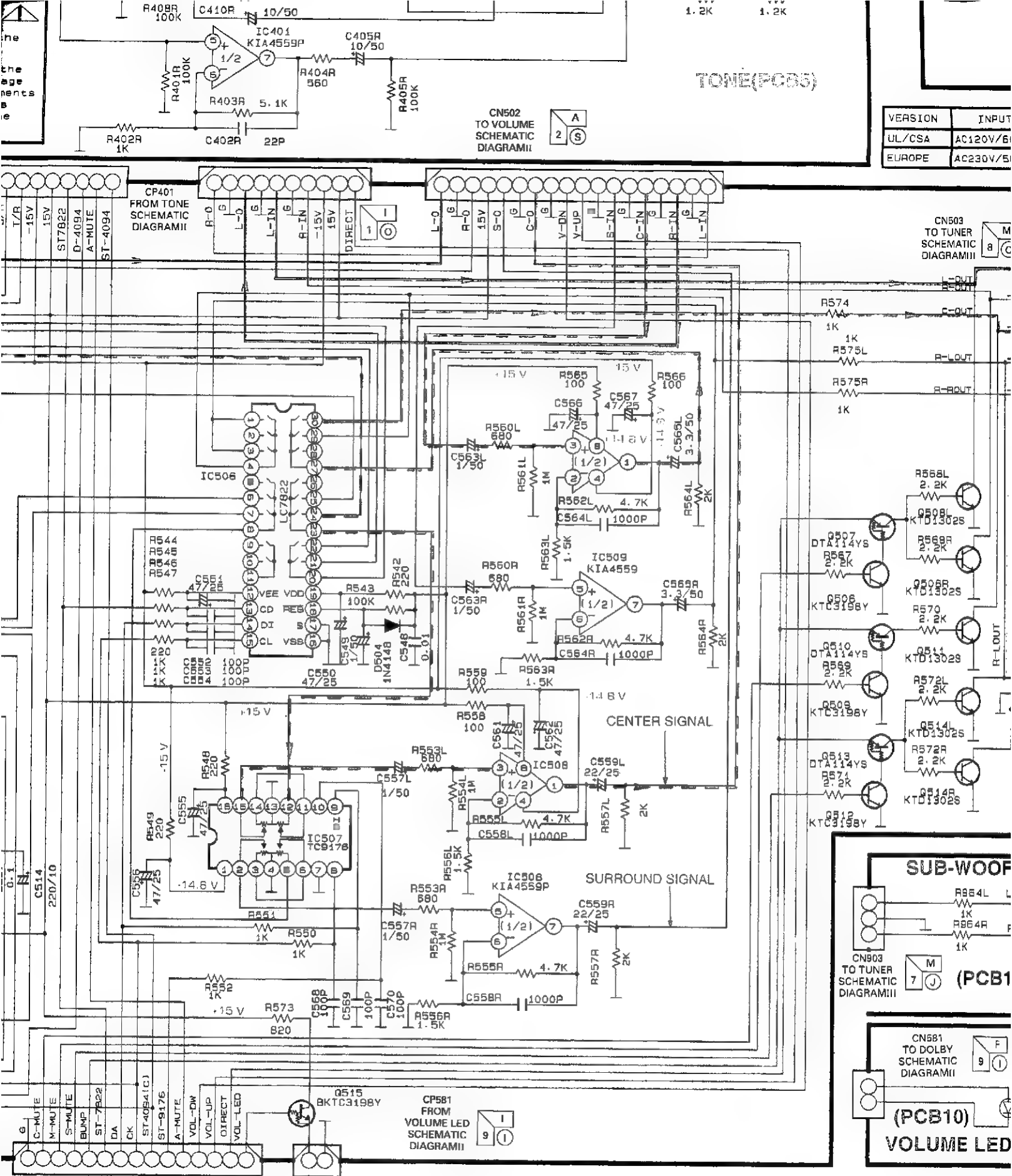


PIN CONNECTION DIAG

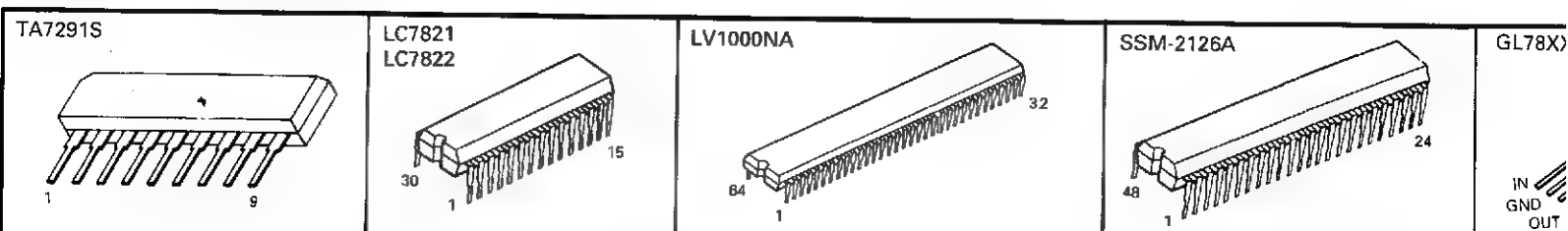
TA7291S

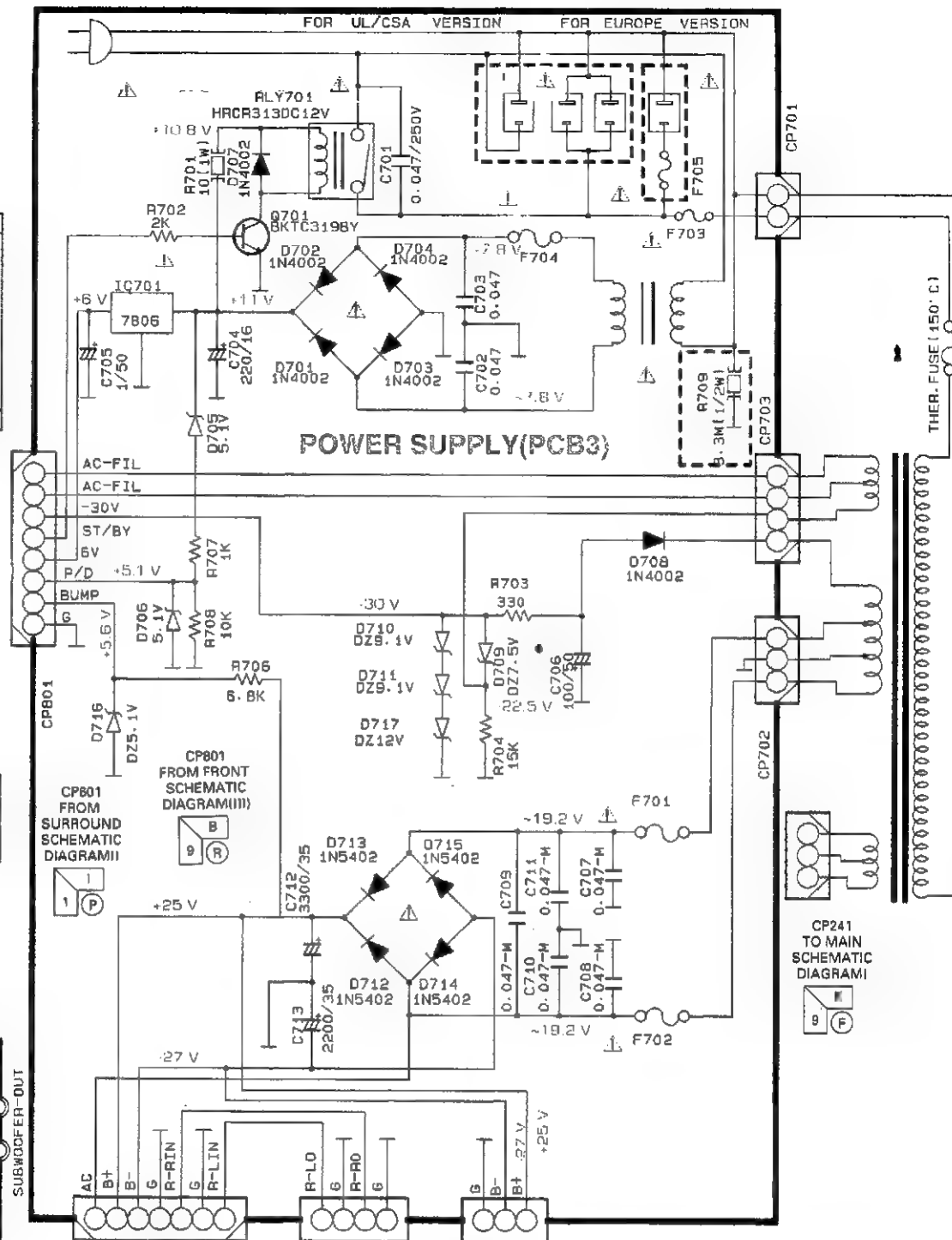


- FRONT "L"ch SIGNAL
- SURROUND SIGNAL
- CENTER SIGNAL

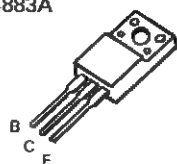
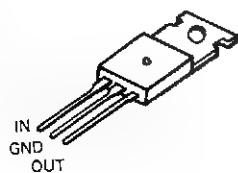
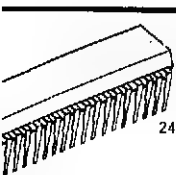


PIN CONNECTION DIAGRAM OF ICS.

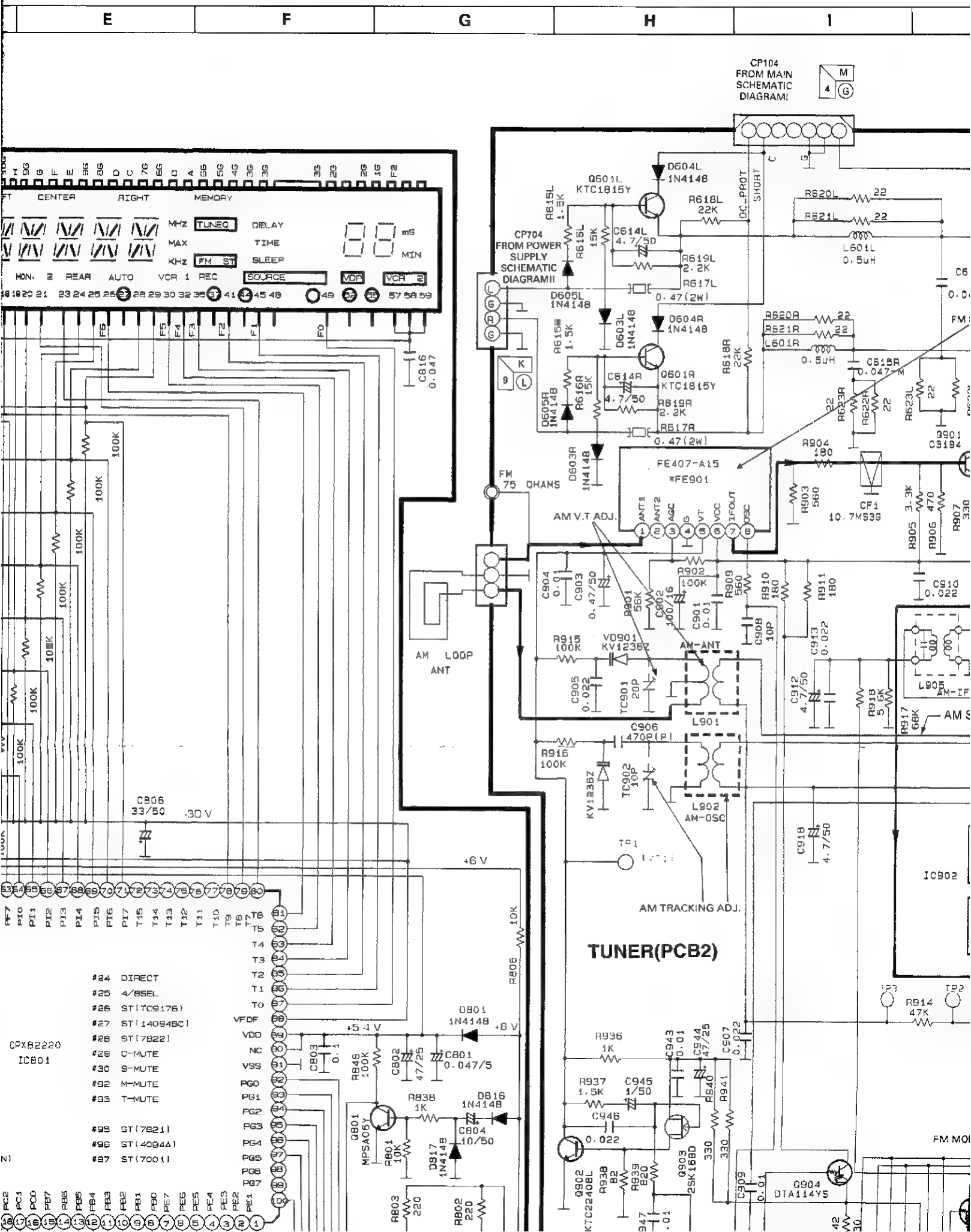


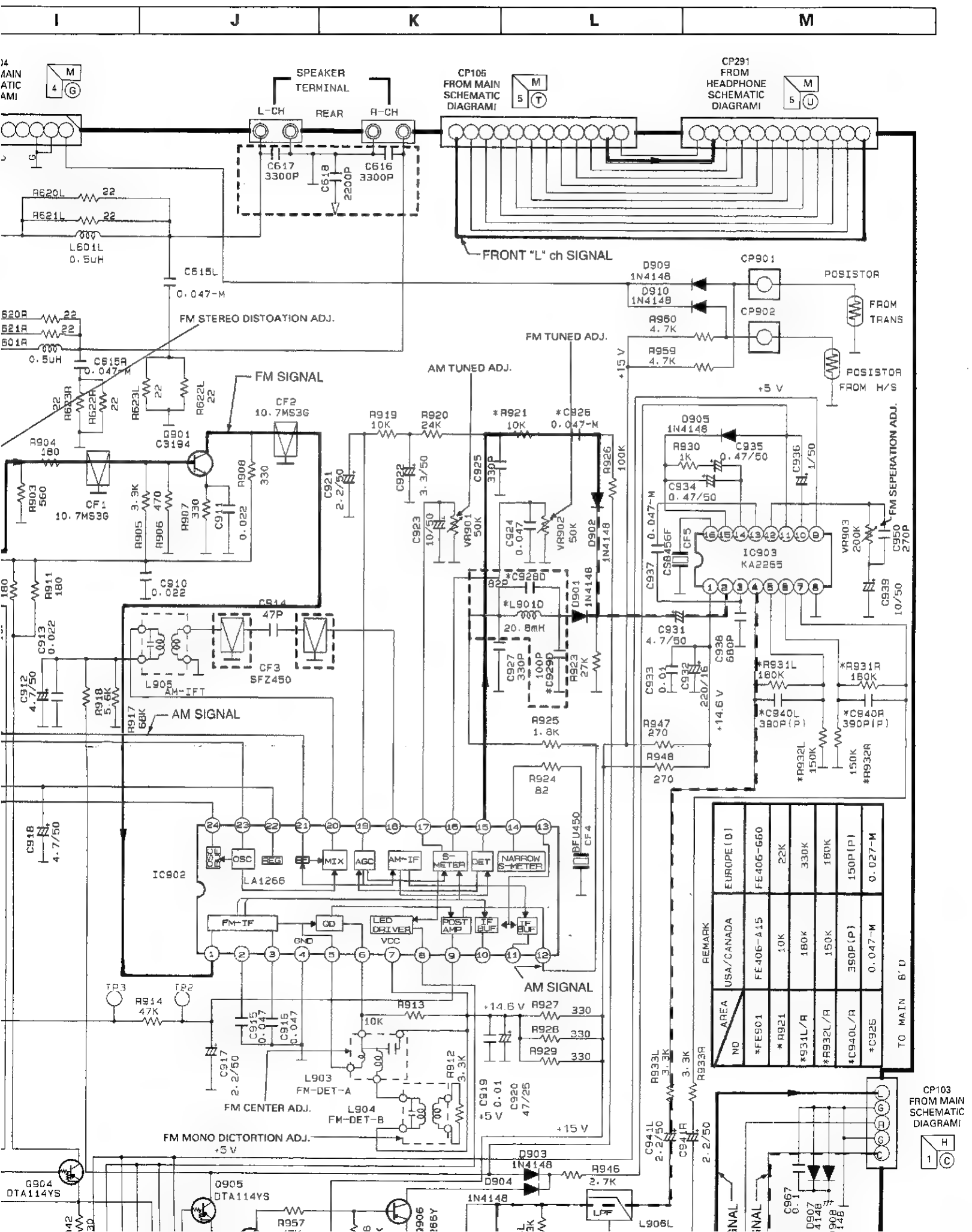
[illegible]

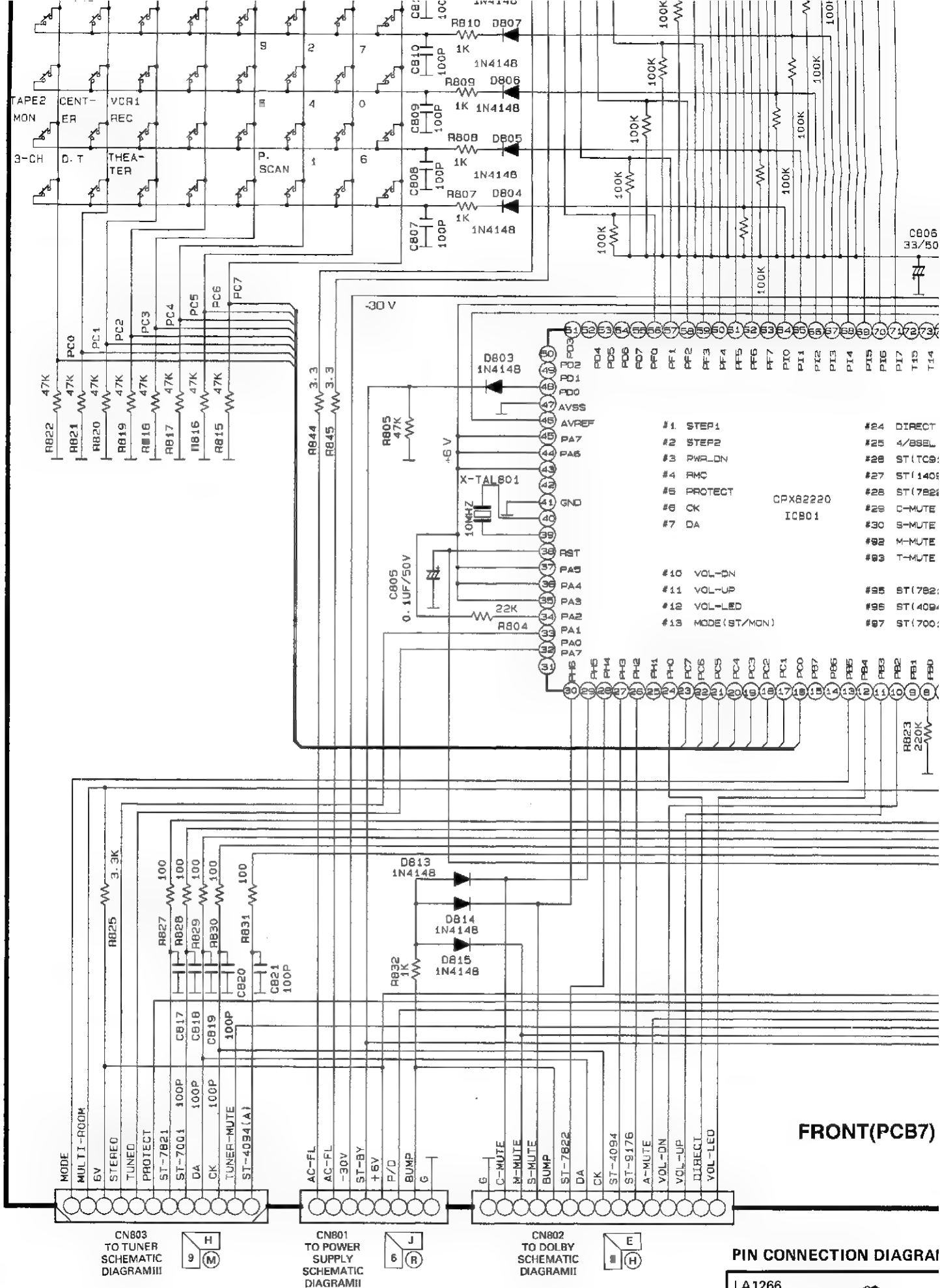
NO	VERSION	USA/CANADA	EUROPE
F701-F702	SB4A/125V	T4A/250V	
F703	SB6A/125V	T4A/250V	
F704	NB315mA/125V	T500mA/250V	
F705	-	T2.5A/250V	
H709	3.3M(1/2W)	-	



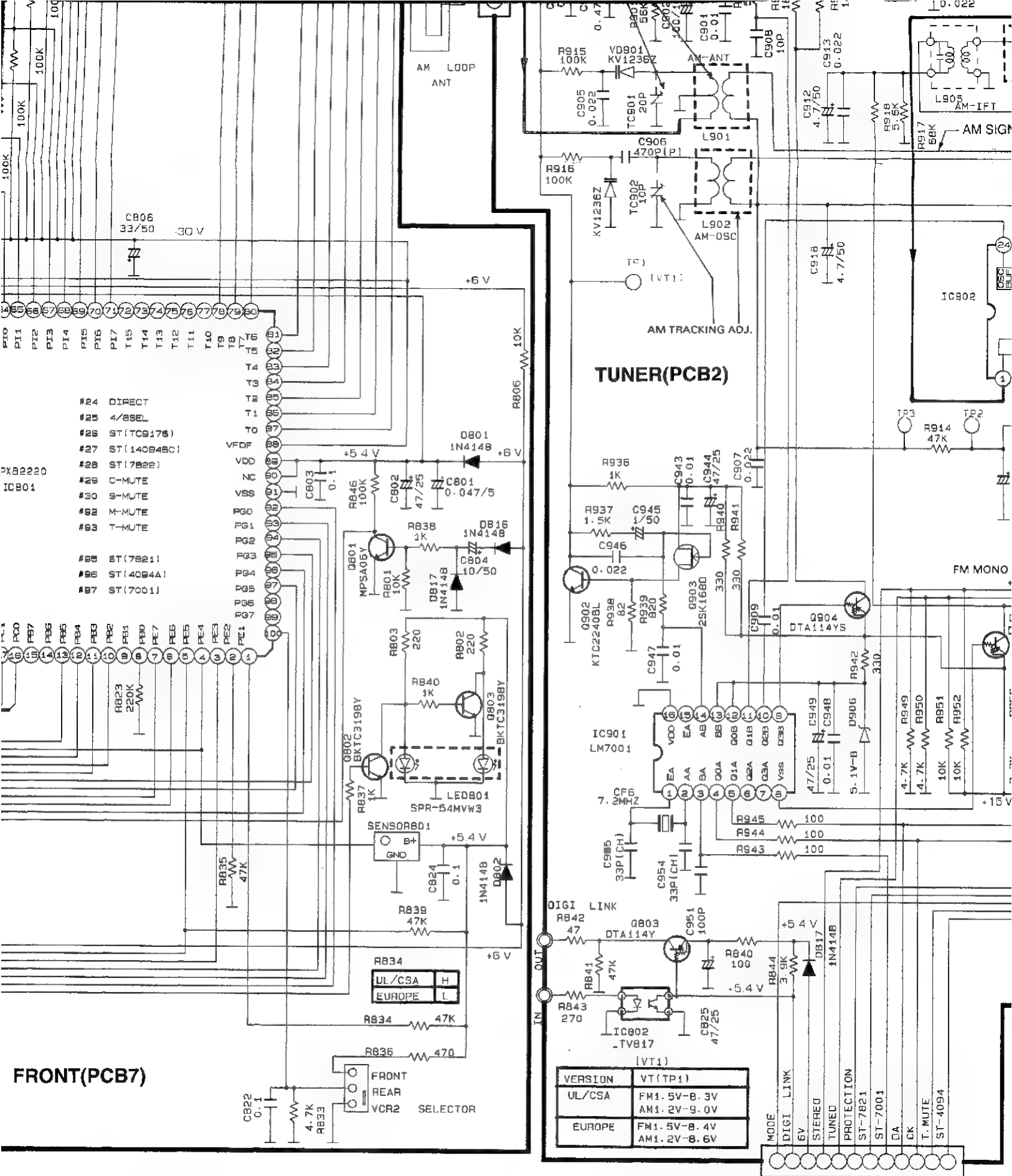




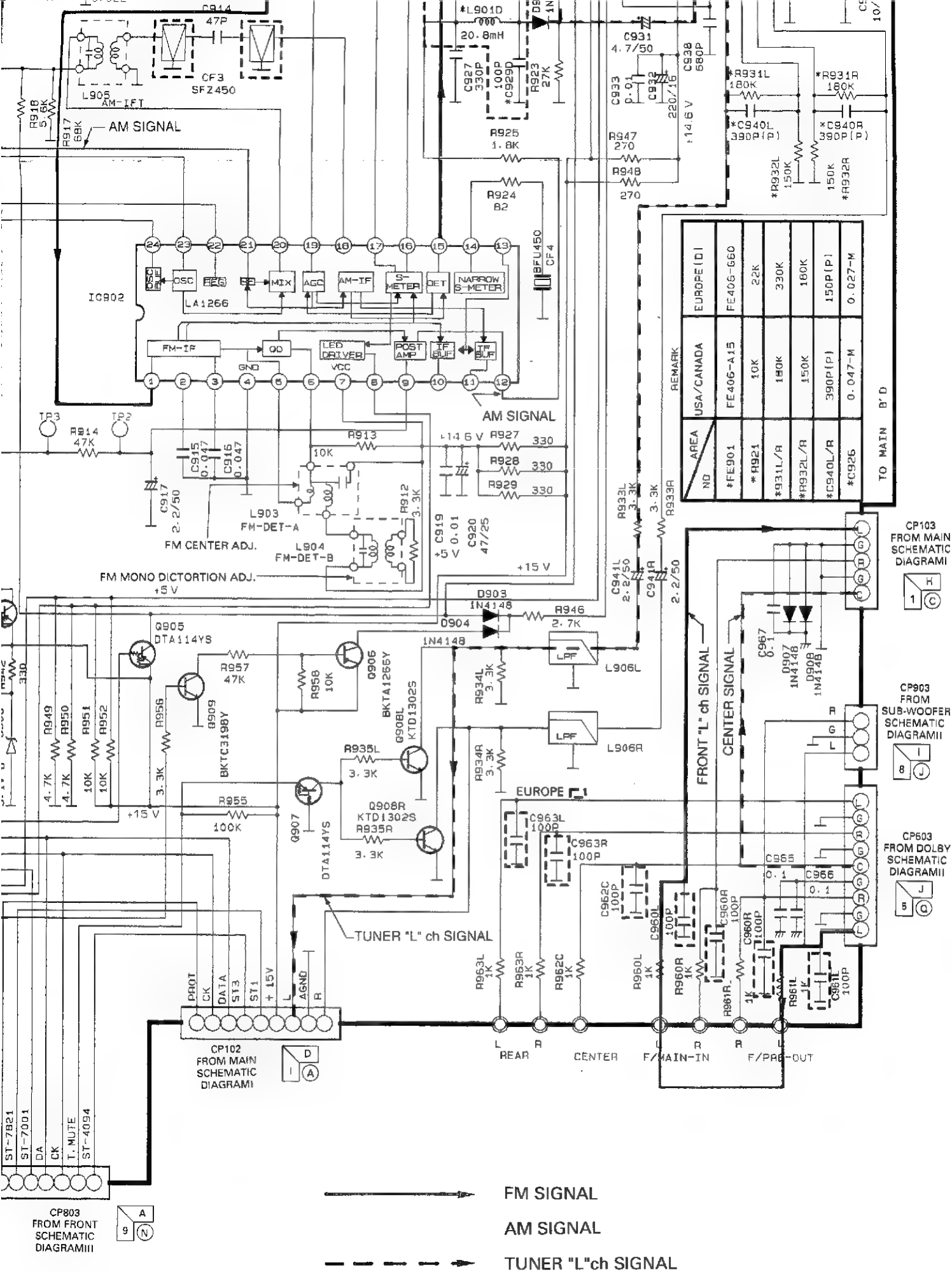






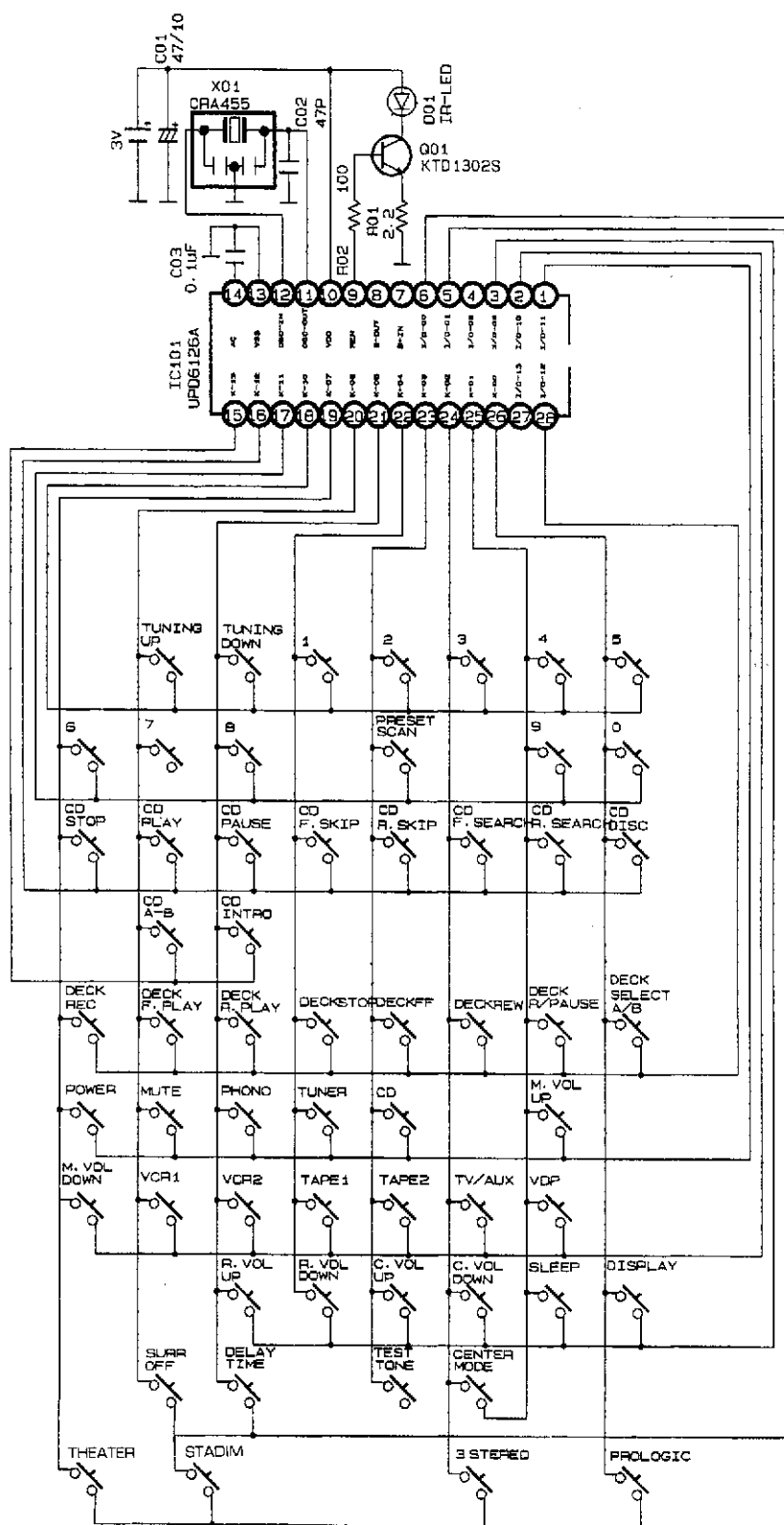


VERSION	VT(TP1)
UL/CSA	FM1.5V-8.3V AM1.2V-9.0V
EUROPE	FM1.5V-8.4V AM1.2V-8.6V

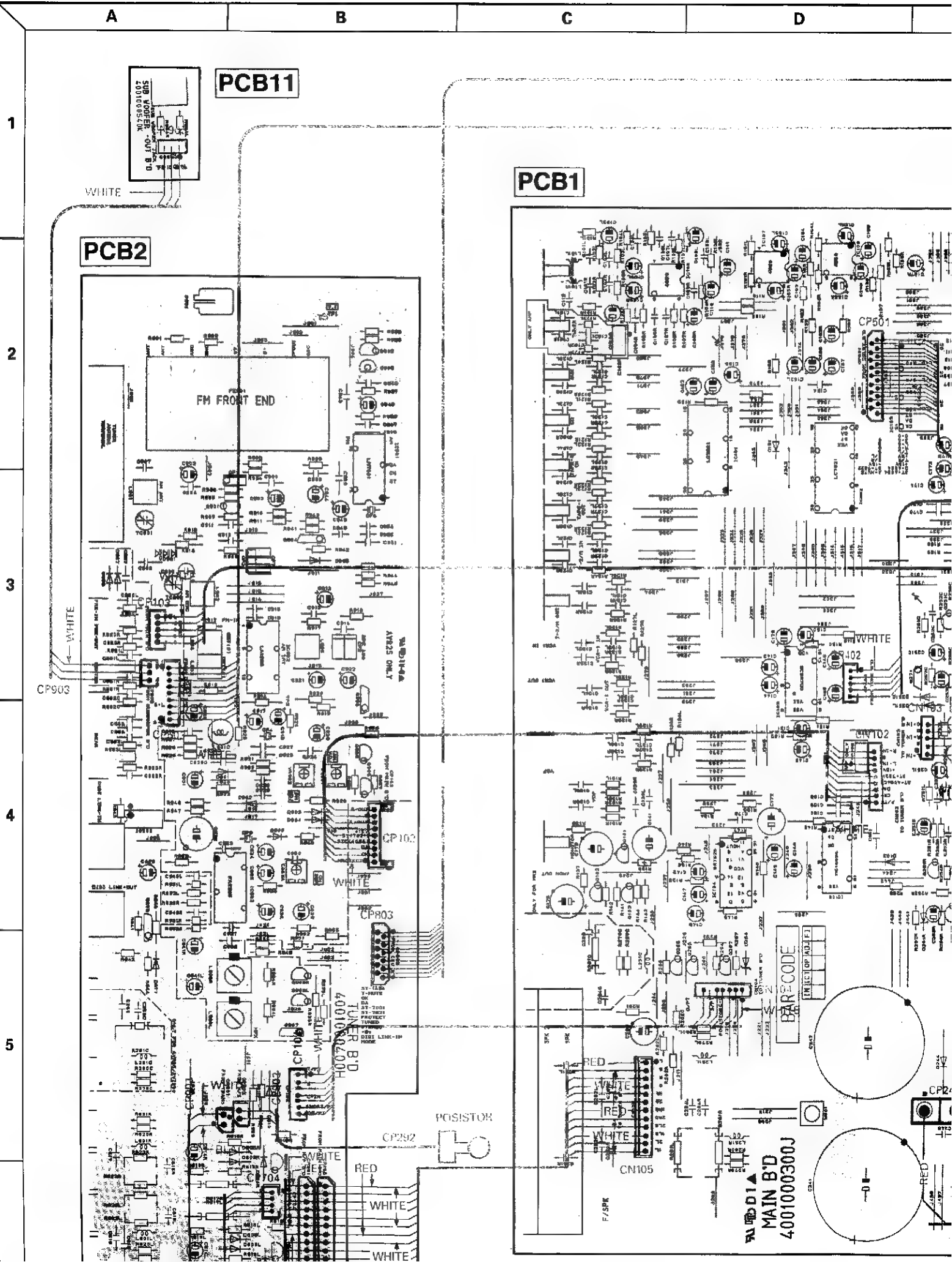


## SCHEMATIC DIAGRAM IV

## COMMANDER



WIRING DIAGRAM



E

F

G

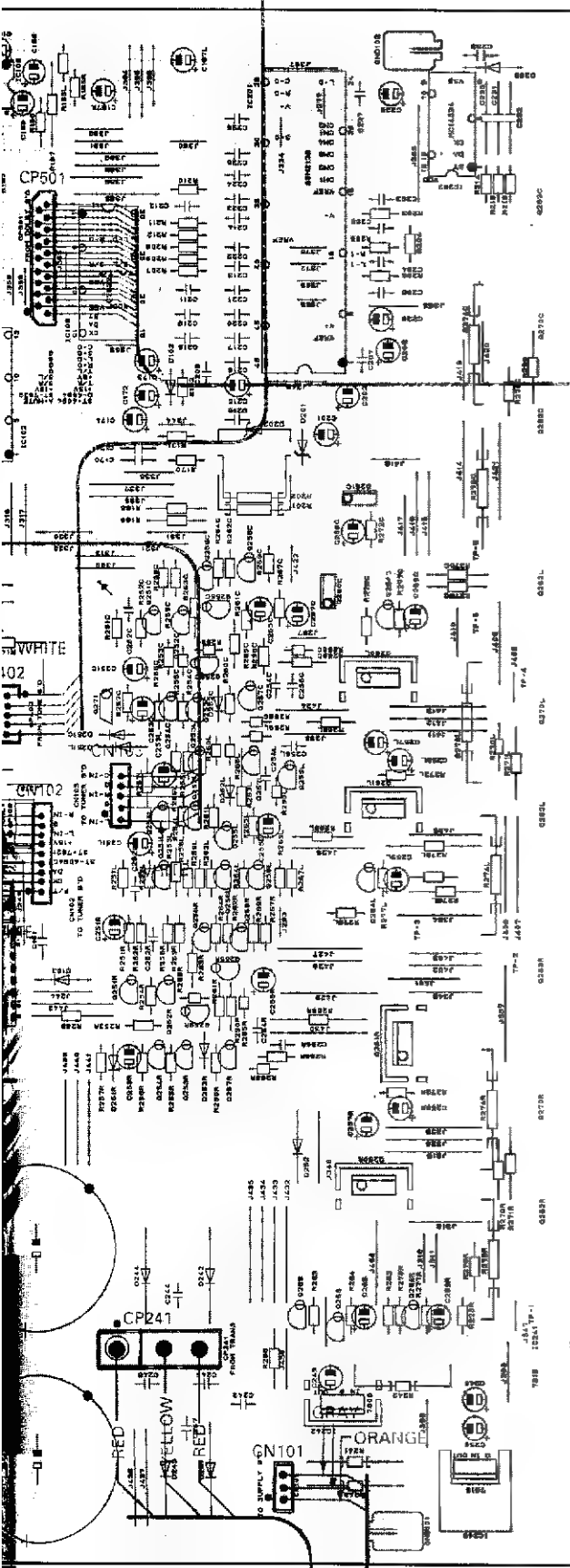
H

PCB10

VOLUME LED B'D  
4001000530K

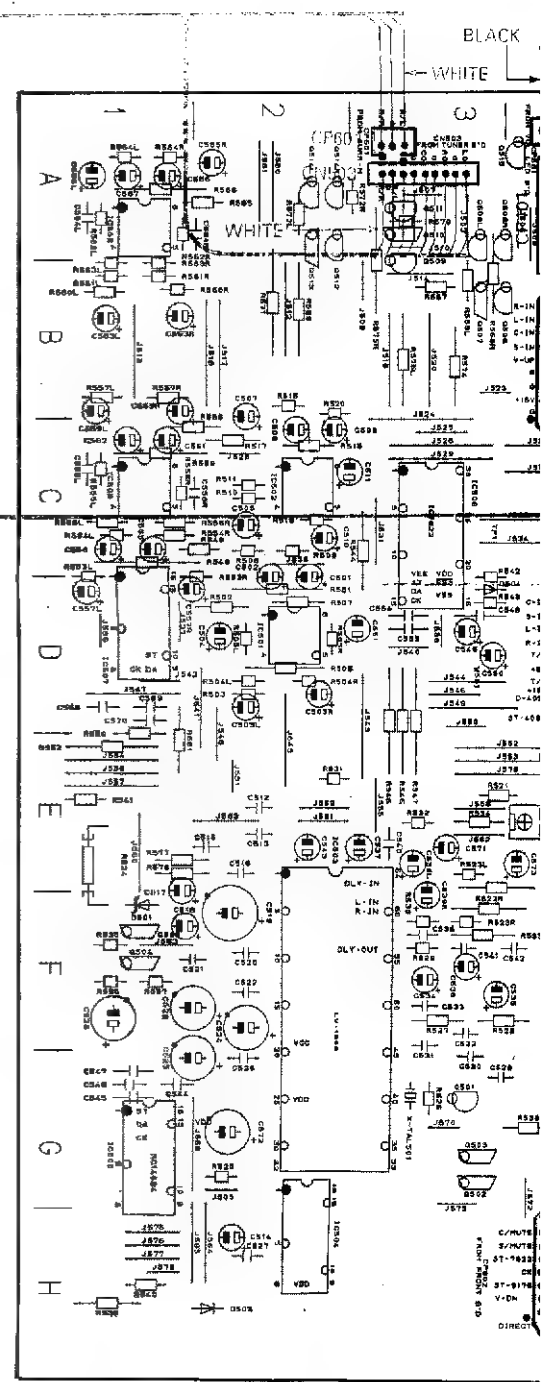
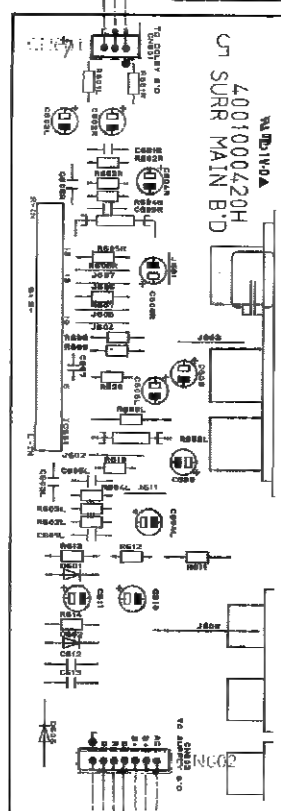
CN581

RED → BLACK



CARD CABLE, ISP

PCB4



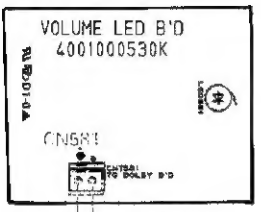
H

I

J

K

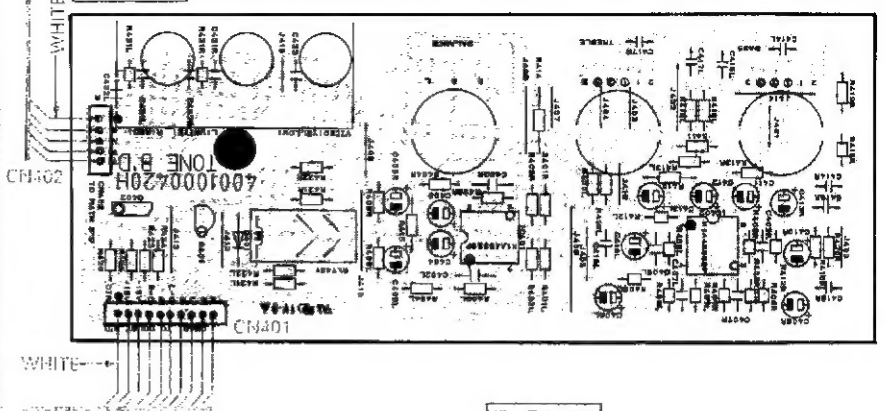
PCB10



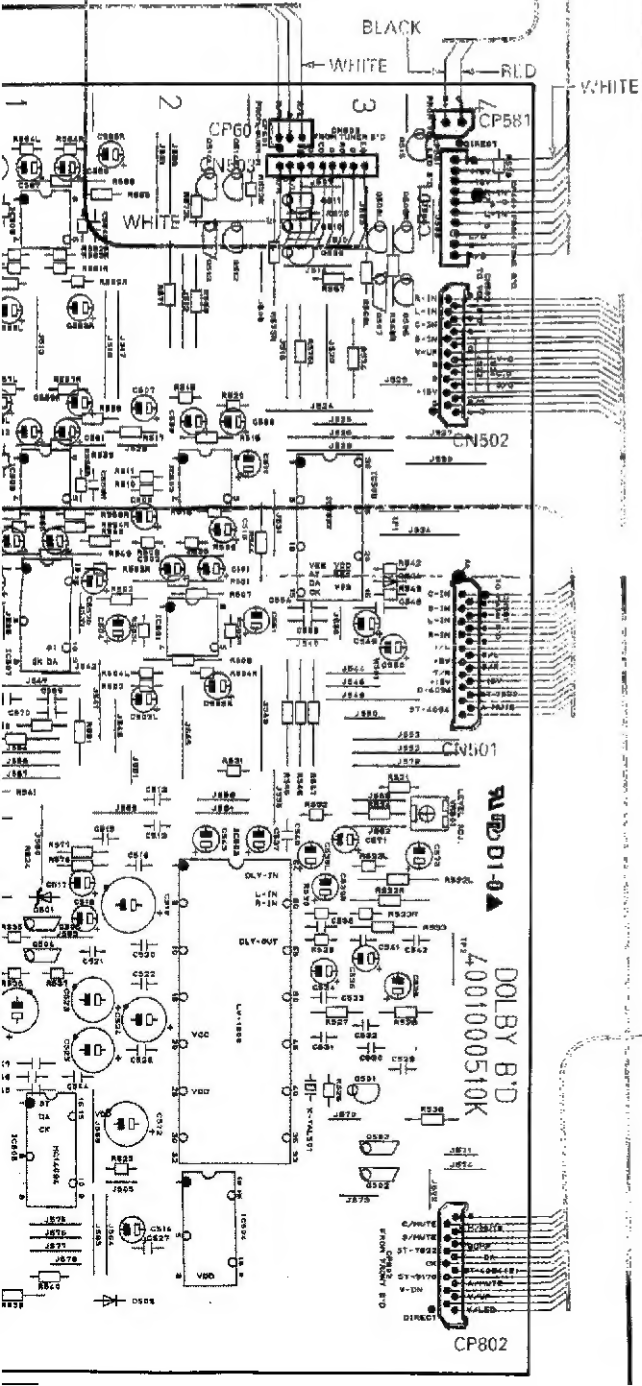
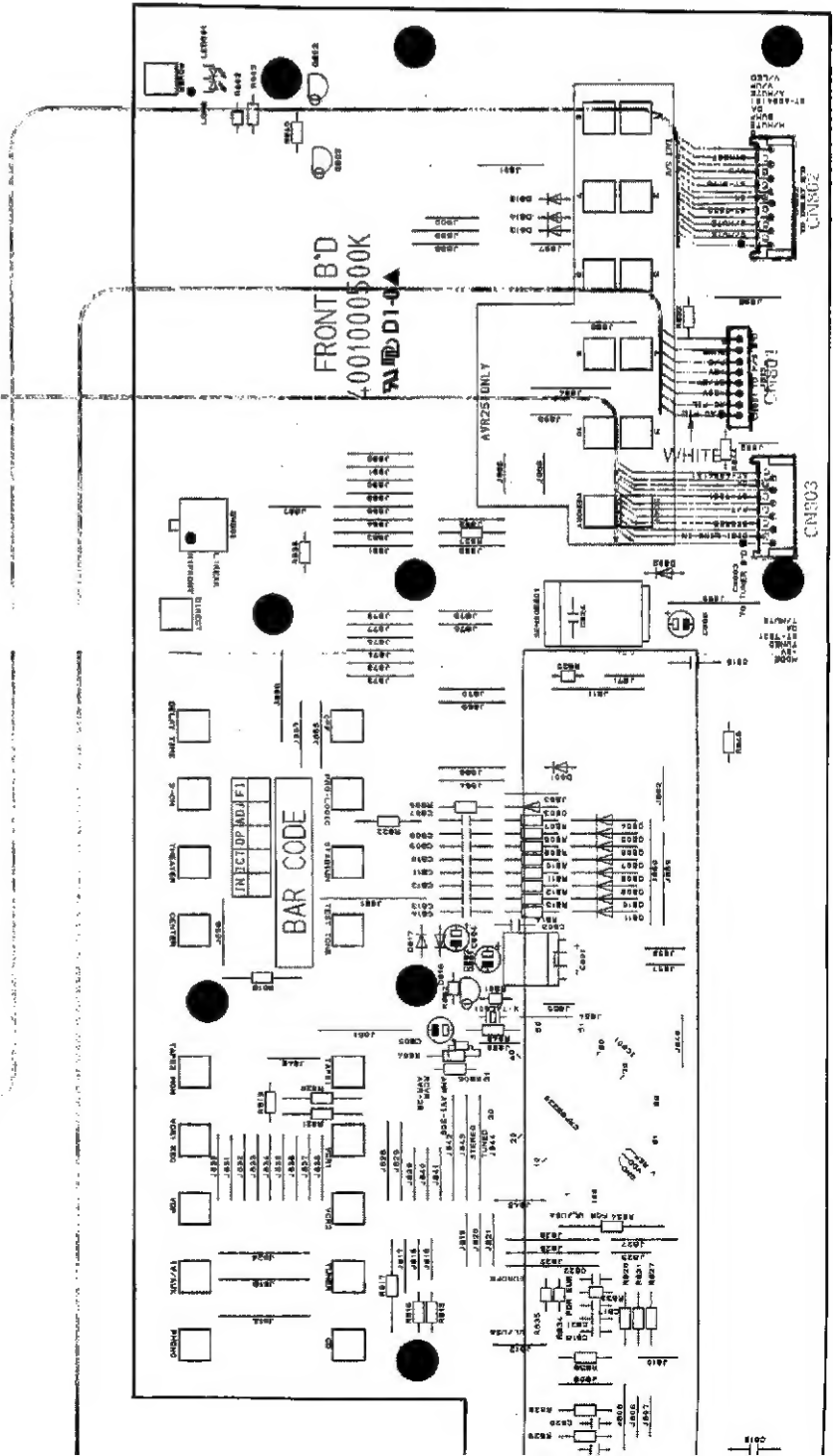
RED BLACK

CARD CABLE 12P

PCB5

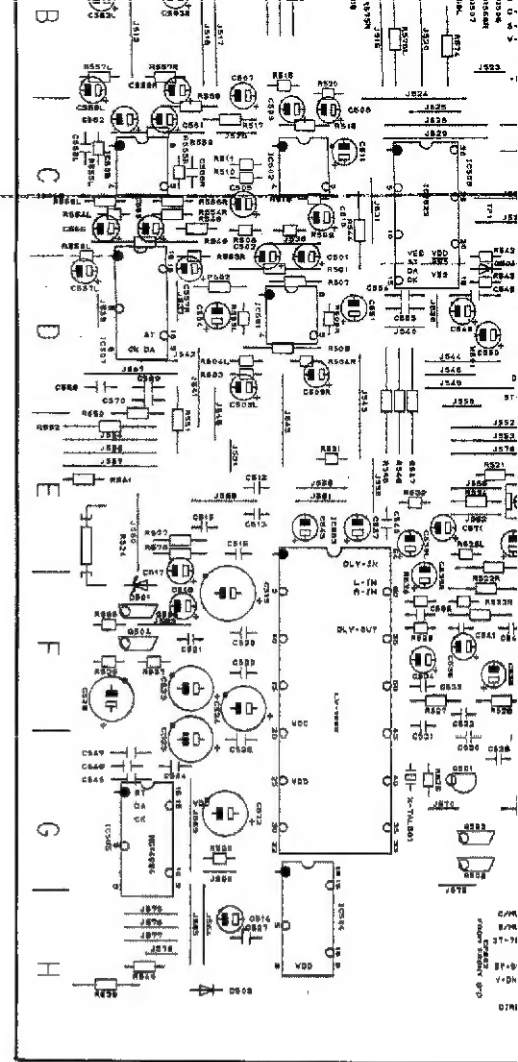


PCB7



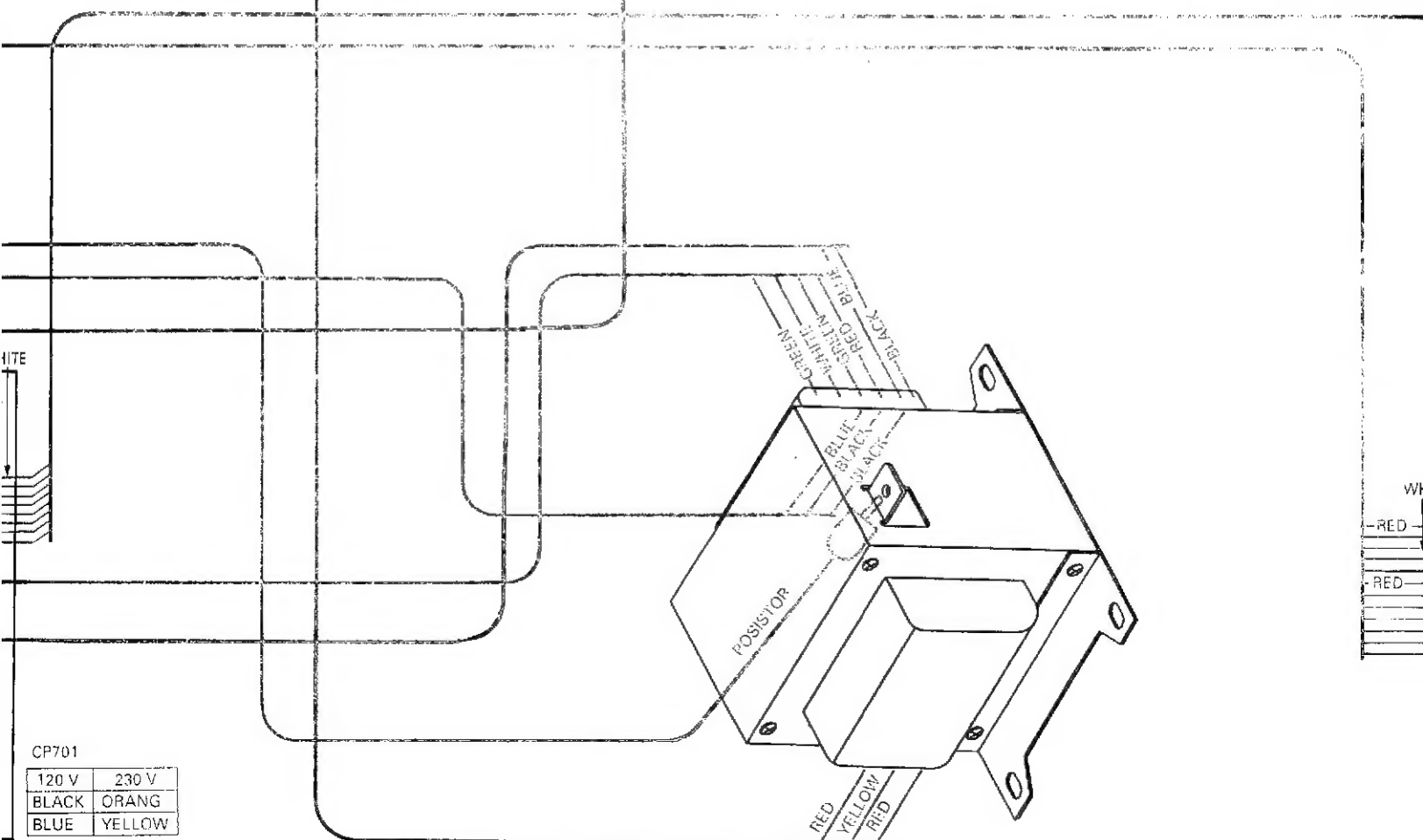






**PCB4**

**PCB8**



120 V	230 V
BLACK	ORANG
BLUE	YELLOW



